

# TC-KB920S

## SERVICE MANUAL

AEP Model  
E Model  
Australian Model



Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"DOLBY", the double-D symbol , and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	TC-KE500S
Tape Transport Mechanism Type	TCM-190VB14

### SPECIFICATIONS

#### System

##### Recording system

4-track 2-channel stereo

##### Fast winding time (approx.)

90 sec. (with Sony C-60 cassette)

##### High-speed fast-winding time (approx.)

45 sec. (with Sony C-60 cassette)

#### Bias

AC bias

#### Heads

Erasing head × 1 (S&F head)  
Recording head × 1 (SD head)  
Playing head × 1 (SD head)

#### Motors

Capstan motor × 1 (DC servo motor)  
Reel motor × 1 (DC motor)

#### Signal-to-noise ratio (at peak level, weighted, and with Dolby NR off)

Type I tape, Sony Type I (NORMAL): 57 dB  
Type II tape, Sony Type II (HIGH): 59 dB  
Type IV tape, Sony Type IV (METAL): 61 dB

#### S/N ratio improvement (approximate values)

With Dolby B NR on: 5 dB at 1 kHz, 10 dB at 5 kHz  
With Dolby C NR on: 15 dB at 500 Hz, 20 dB at 1 kHz  
With Dolby S NR on: 10 dB at 100 Hz, 24 dB at 1 kHz

#### Harmonic distortion

0.4% (with Type I tape, Sony Type I (NORMAL):  
160n Wb/m 315 Hz, 3rd H.D.)  
1.5% (with Type IV tape, Sony Type IV (METAL):  
250n Wb/m 315 Hz, 3rd H.D.)

#### Frequency response (Dolby NR off)

Type I tape, Sony Type I (NORMAL):  
20 - 17,000 Hz ( $\pm 3$  dB, IEC)  
15 - 18,000 Hz ( $\pm 6$  dB)  
Type II tape, Sony Type II (HIGH):  
20 - 18,000 Hz ( $\pm 3$  dB, IEC)  
15 - 19,000 Hz ( $\pm 6$  dB)  
Type IV tape, Sony Type IV (METAL):  
20 - 20,000 Hz ( $\pm 3$  dB, IEC)  
20 - 16,000 Hz ( $\pm 3$  dB, -4dB recording)  
15 - 21,000 Hz ( $\pm 6$  dB)

#### Inputs

##### Line inputs (phono jacks)

Sensitivity: 0.16 V  
Input impedance: 47 kilohms

- Continued on next page -

## STEREO CASSETTE DECK



MICROFILM

# SONY®

## Outputs

### Line outputs (phono jacks)

Rated output level: 0.5 V at a load impedance of  
47 kilohms  
Load impedance: Over 10 kilohms

### Headphones (stereo phone jack)

Output level: 0.25 mW at a load impedance of  
32 ohms

## General

### Power requirements

Where purchased	Power requirements
Continental Europe	220 - 230 V AC, 50/60 Hz
Australia	240 V AC, 50/60 Hz
Other countries	120, 220, or 230 - 240 V AC, 50/60Hz adjustable with the voltage selector

Power consumption  
23 W

Dimensions (approx.) (w/h/d)  
430 × 123 × 305 mm  
incl. projecting parts and controls

Mass (approx.)  
5.1 kg

Supplied accessories  
Audio connecting cords (2)

Design and specifications are subject to change without  
notice.

## Flexible Circuit Board Repairing

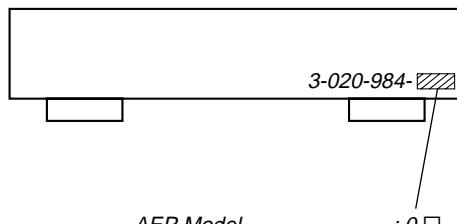
- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

## Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

## MODEL IDENTIFICATION

- BACK PANEL -



AEP Model : 0   
Australian Model : 2   
Malaysia, Singapore Model: 3

## SAFETY-RELATED COMPONENT WARNING!!

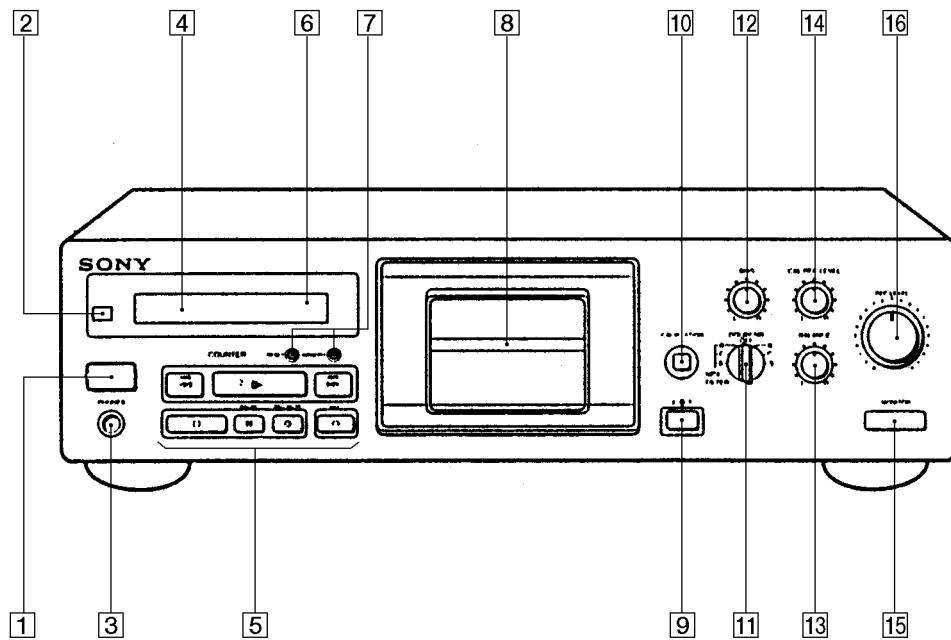
COMPONENTS IDENTIFIED BY MARK  $\triangle$  OR DOTTED LINE WITH MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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## SECTION 1 GENERAL

### LOCATION OF CONTROLS



- |                            |                            |
|----------------------------|----------------------------|
| [1] I/O (Power) button     | [9] ▲ EJECT button         |
| [2] Remote control sensor  | [10] AUTO CAL button       |
| [3] PHONES jack            | [11] DOLBY NR switch       |
| [4] Display panel          | [12] BIAS control          |
| [5] Tape operation buttons | [13] BALANCE control       |
| AMS* ▶◀ button             | [14] CAL REC LEVEL control |
| ▶ button                   | [15] MONITOR button        |
| AMS* ▶▶ button             | [16] REC LEVEL control     |
| ■ button                   |                            |
| ■ PAUSE button             |                            |
| ○ REC MUTING button        |                            |
| ● REC button               |                            |
| [6] Tape counter           |                            |
| [7] Counter buttons        |                            |
| RESET button               |                            |
| MEMORY button              |                            |
| [8] Cassette holder        |                            |

\* AMS is an abbreviation for Automatic Music Sensor.

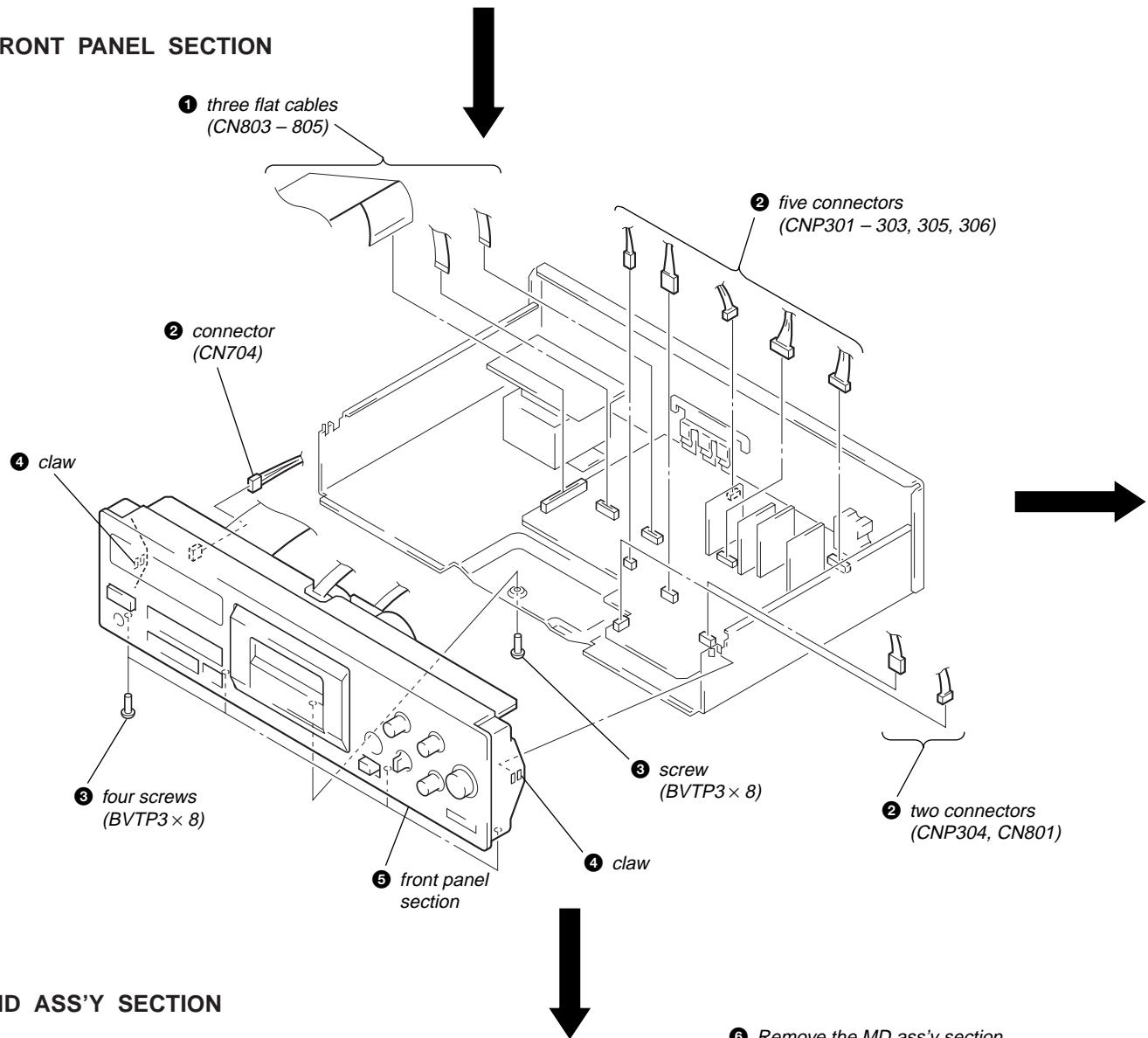
## SECTION 2 DISASSEMBLY

**Note:** Follow the disassembly procedure in the numerical order given.

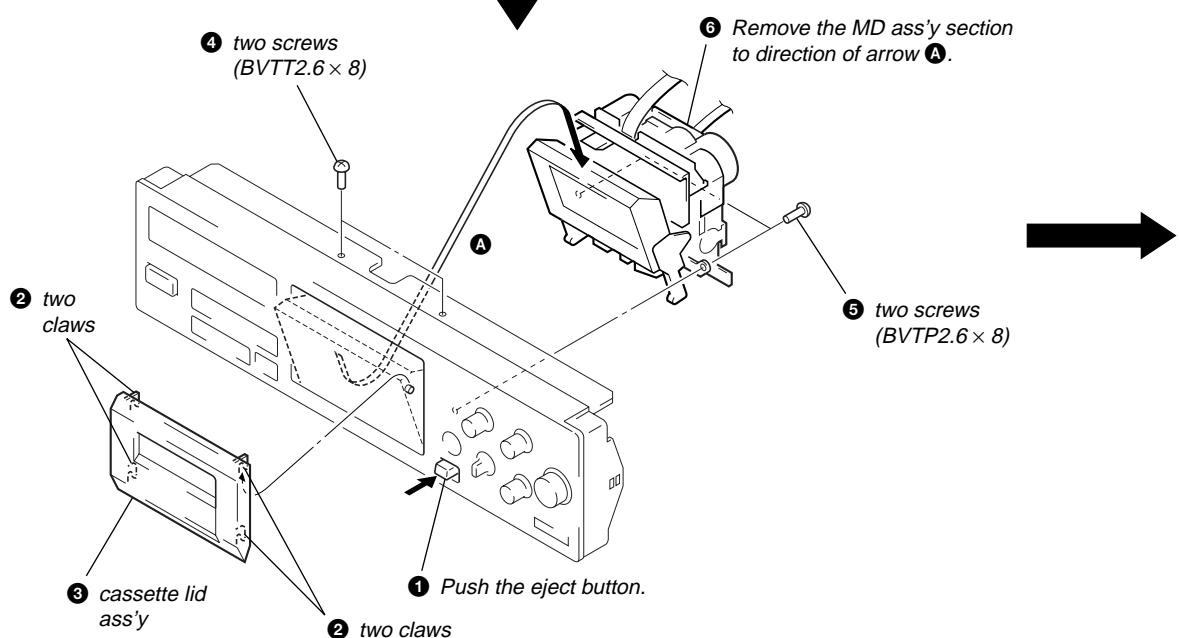
### CASE

Unscrew the four case attachment seven tapping screws and remove the case.

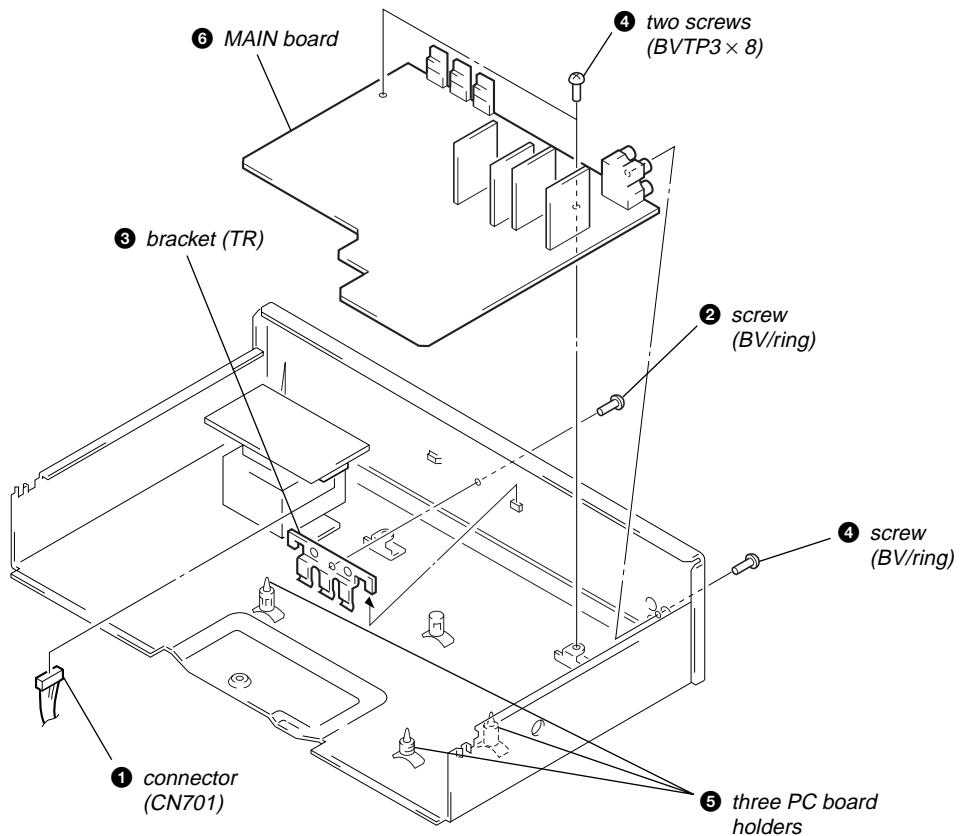
### FRONT PANEL SECTION



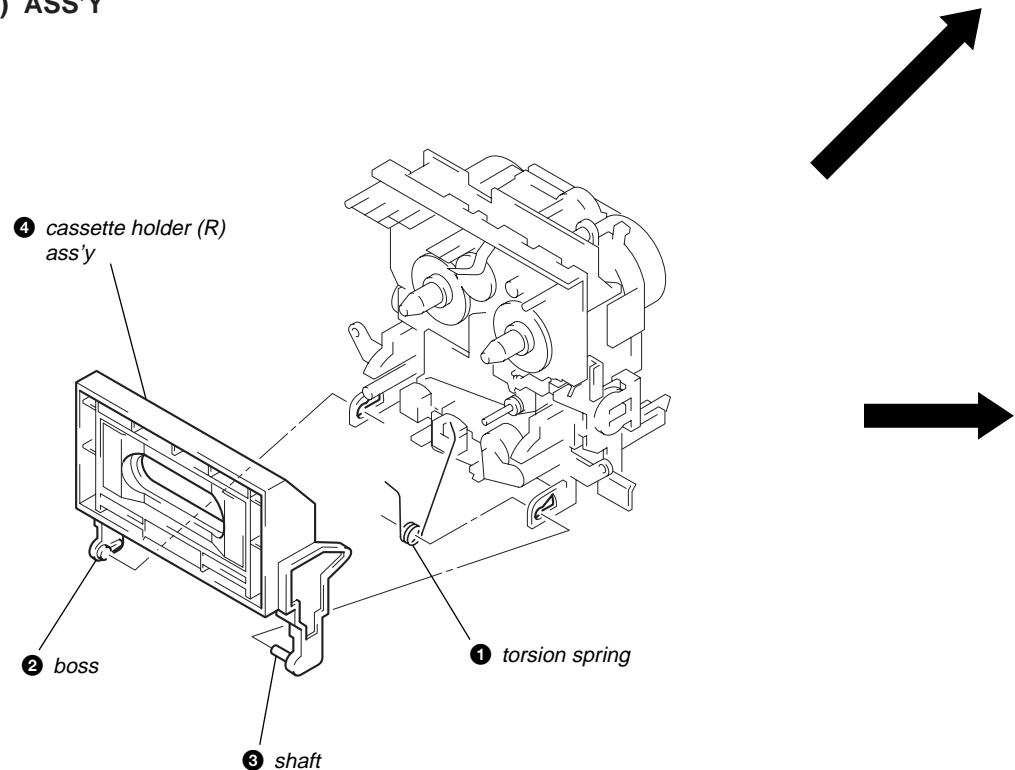
### MD ASS'Y SECTION



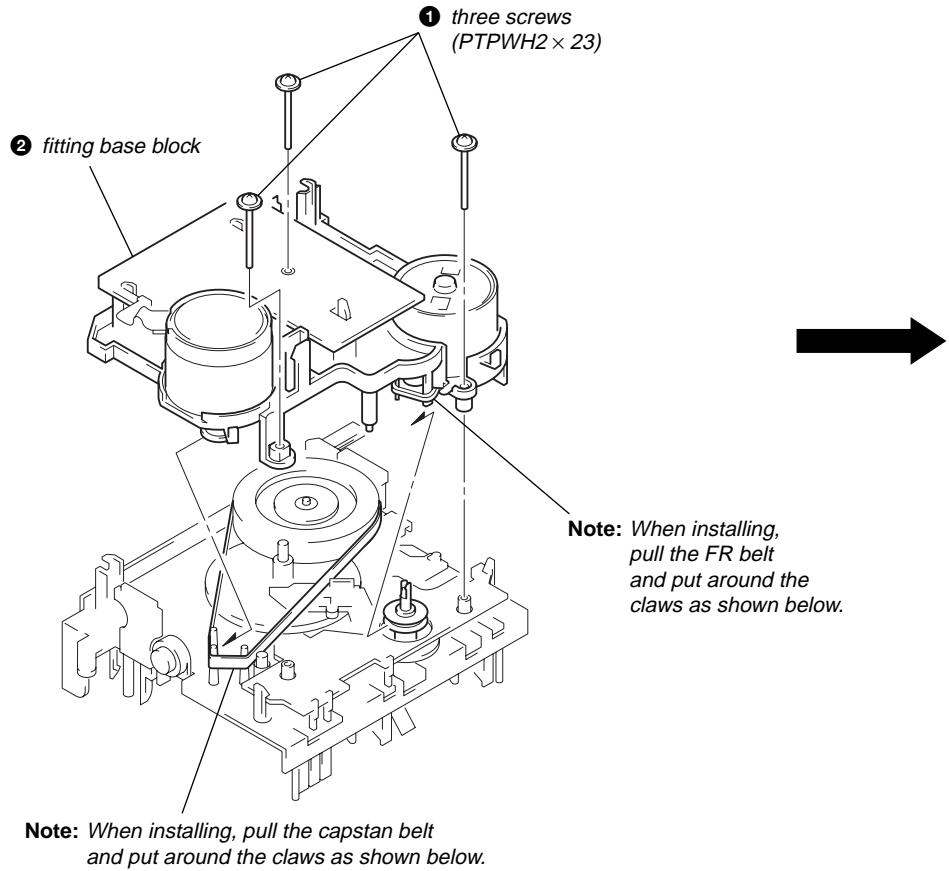
## MAIN BOARD



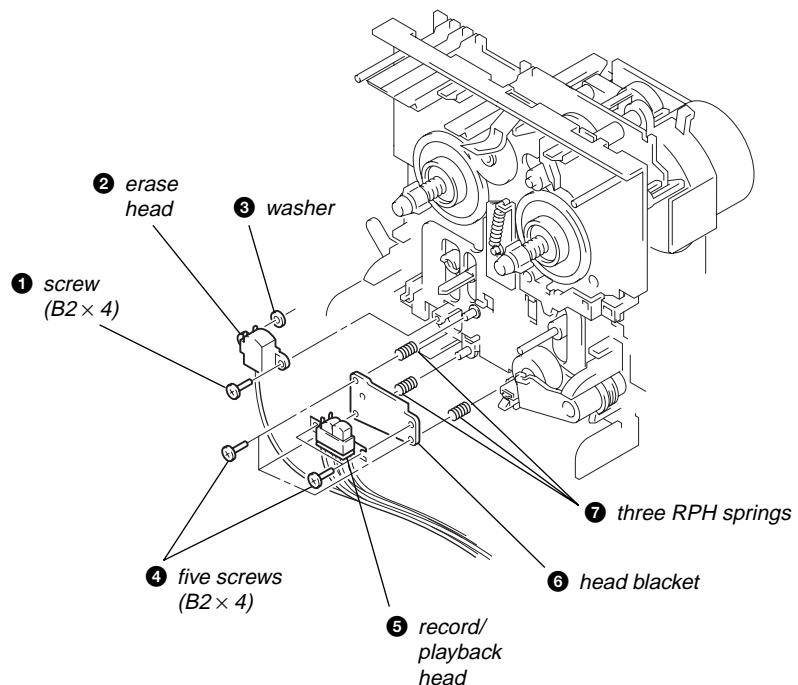
## CASSETTE HOLDER (R) ASS'Y



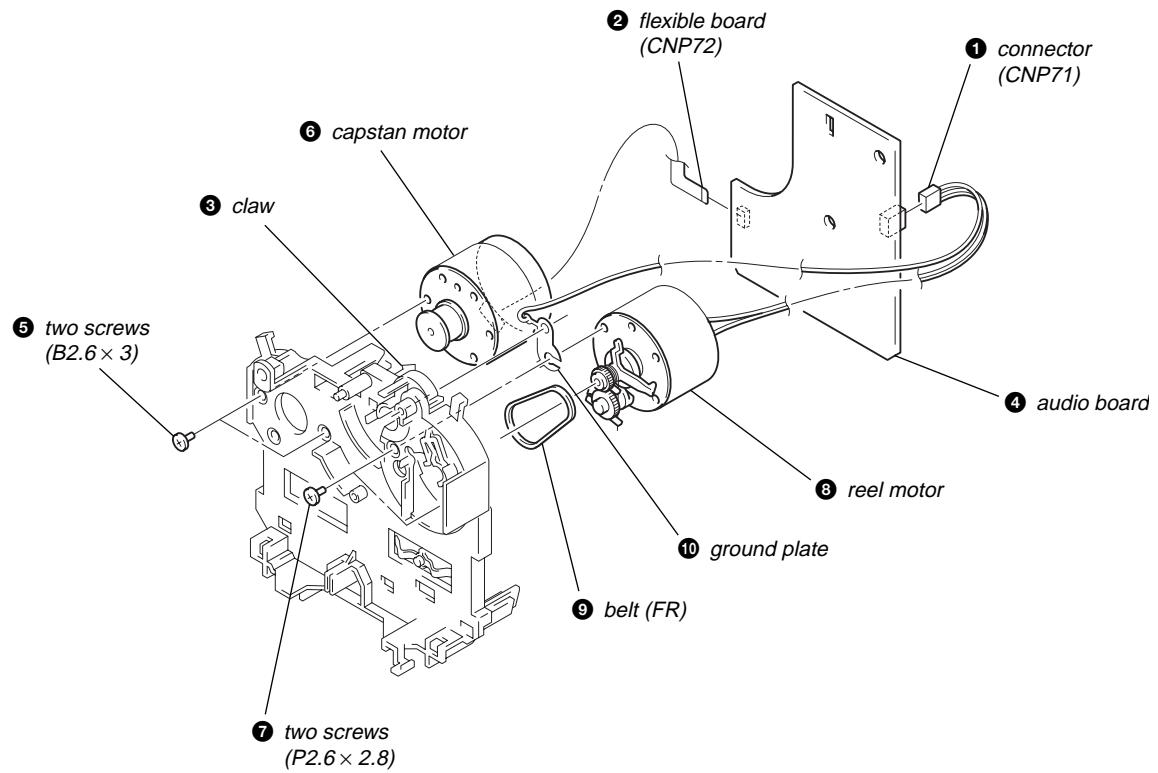
## FITTING BASE BLOCK



## HEAD



## AUDIO BOARD AND MOTOR



## SECTION 3

### MECHANICAL ADJUSTMENTS

#### PRECAUTION

1. Clean the following parts with a denatured alcohol-moistened swab:
 

record/playback/erase head	pinch roller
rubber belts	capstan
idler	
2. Demagnetize the record/playback head with a head demagnetizer.  
(Head demagnetizer do not approach for the erase head.)
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

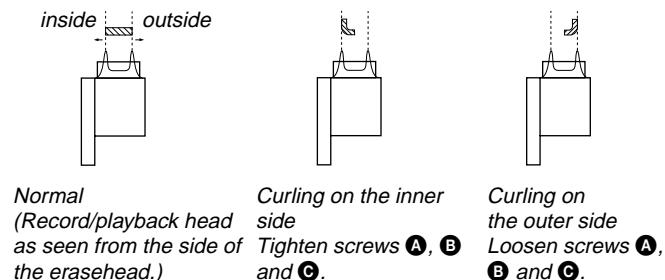
#### • Torque Measurement

Mode	Torque Meter	Meter Reading
Forward	CQ-102C	30 to 65 g·cm (0.42 to 0.90 oz·inch)
Forward back tension	CQ-102C	1 to 6 g·cm (0.014 to 0.08 oz·inch)
FF/REW	CQ-201B	70 to 120 g·cm (0.98 to 1.66 oz·inch)

#### Record/Playback Head Height/Declination Adjustment

##### Procedures:

1. Test cassette: CQ-009C
2. Insert the mirror cassette and put the unit in record/Playback mode.
- 1) Height Adjustment:  
Check to see if the tape is curling at the tape guide of the head. If it is curling, tighten screws **A**, **B** and **C**, respectively by the same angle, moving the head so that it remains at the same angle throughout the procedure. If it curls on the bottom side of the mirror cassette (actually the inner side), tighten all the screws equally; but loosen them if the tape begins to curl on the top side. (outer side.)



#### 2) Declination Adjustment:

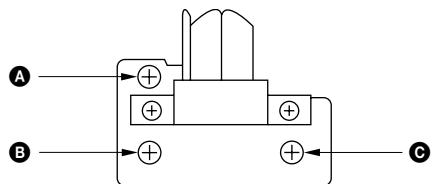
While in the record/playback position, set the back tension to 0 (wind the supply reel with something thin like a pencil in a counterclockwise direction) and make sure there is no curling or shifting (shifting up/shifting down) at the guide of the record/playback head.

Because shifting can only occur due to a difference in the width of the tape and that of the tape guides (curling will otherwise occur), it is necessary to pay close attention since it can be easily overlooked.

When there is a shift, tighten screws **B** and **C** equally and change the declination of the head. If the tape is shifting up, tighten the screws, and if it is shifting down, loosen them.

Repeat the adjustments in steps 1) to 2) and fine adjust the height and the declination.

**Adjustment Location:** – record/playback head –



## SECTION 4

### ELECTRICAL ADJUSTMENTS

**Note:** The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording.

The adjustments should be performed before for both L-CH and R-CH.

- Switches and controls should be set as follows unless otherwise specified.

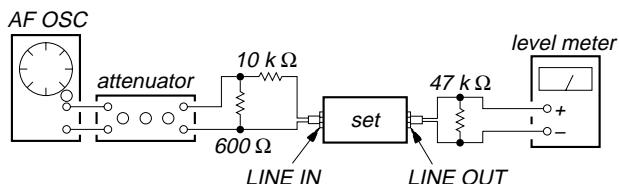
DOLBY NR, MPX FILTER switch: OFF

MONITOR switch: Tape

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

— Record Mode —



0 dB=0.775 V

#### Standard Input Level

input terminal	LINE IN
source impedance	10 kΩ
input signal level	0.5 V (-3.8 dB)

#### Standard Output Level

output terminal	LINE OUT
load impedance	47 kΩ
output signal level	0.5 V (-3.8 dB)

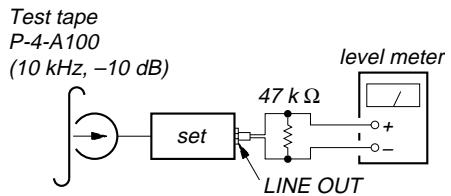
#### Test Tape

Type	Signal	Used for
P-4-A100	10 kHz, -10 dB	Azimuth Adjustment
P-4-L300	315 Hz, 0 dB	Playback Level Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment

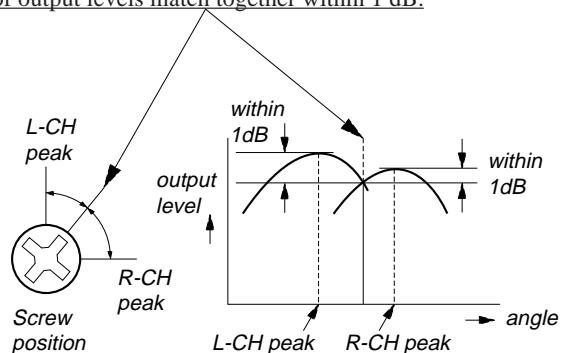
#### Record/Playback Head Azimuth Adjustment

##### Procedure:

1. Mode: FWD playback

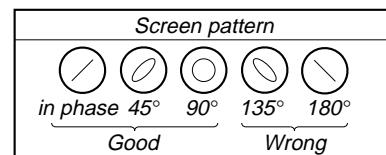
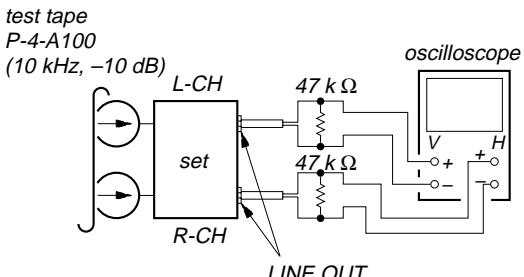


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



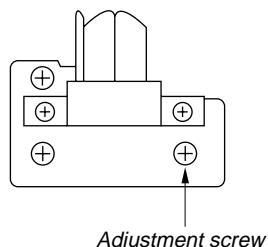
3. Phase Check

Mode: playback



4. After the adjustment, lock the screw with locking compound.

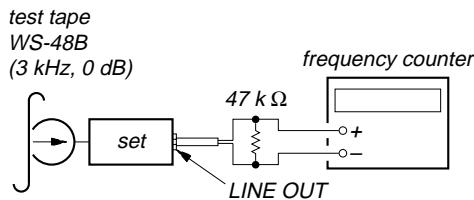
**Adjustment Location:** Record/Playback head



## Tape Speed Adjustment

### Procedure:

Mode: playback



1. Set to FWD playback mode.
2. Adjust RV71 so that the frequency counter reading becomes  $3,000 \pm 90$  Hz.
3. Frequency difference between the beginning and the end of the tape should be within 3%.

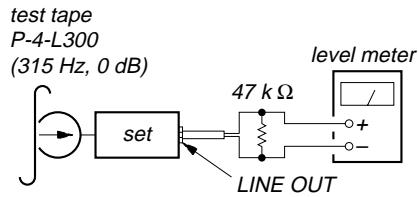
**Adjustment Location:** AUDIO board (See page 12.)

Sample value of Wow and Flutter: 0.3% or less W.RMS (JIS)  
(WS-48B)

## Playback Level Adjustment

### Procedure:

Mode: playback



Adjust RV121 (L-CH) and RV221 (R-CH) so that the reading on level meter meets the adjustment limits below.

### Adjustment Limits:

LINE OUT level:  $-7.7 \pm 0.5$  dB (0.301 to 0.338 V)

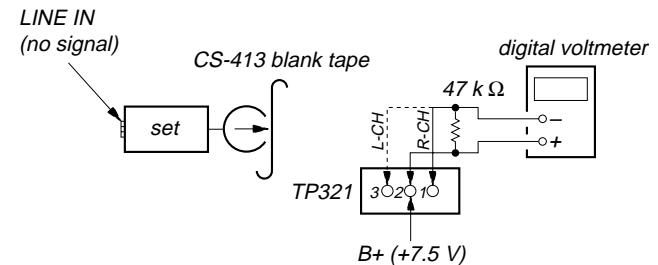
Level difference between channels: within 0.5 dB

Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

**Adjustment Location:** MAIN board (See page 12.)

## Bias Consumption Current Adjustment

### Procedure:



1. Set RV103 (L-CH) and RV203 (R-CH) to mechanical center and turn the set recording mode.
2. Connect digital voltmeter as shown by the following table.
3. Adjust the following transformers for the minimum readings on the digital voltmeter.

	Measurement Point	Adjustment Part	Value
L-CH	② and ③, TP321	T101	minimum
R-CH	① and ②, TP321	T201	

**Adjustment Location:** MAIN board (See page 12.)

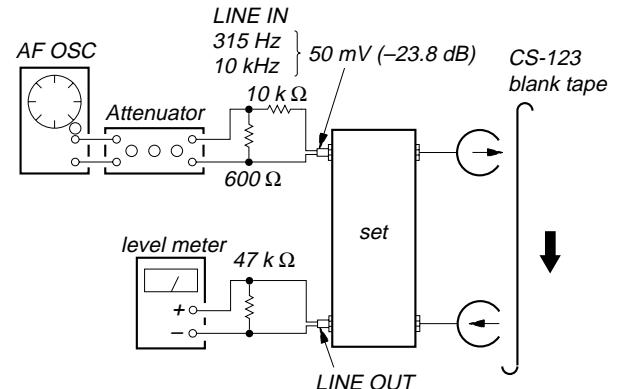
## Record Bias Adjustment

### Setting:

REC LEVEL control: Standard Record (See page 10.)

### Procedure:

1. Mode: record and playback



2. Adjust RV103 (L-CH) and RV203 (R-CH) so that 10 kHz playback output is  $0 \pm 0.3$  dB relative to the 315 Hz output.

**Adjustment Location:** MAIN board (See page 12.)

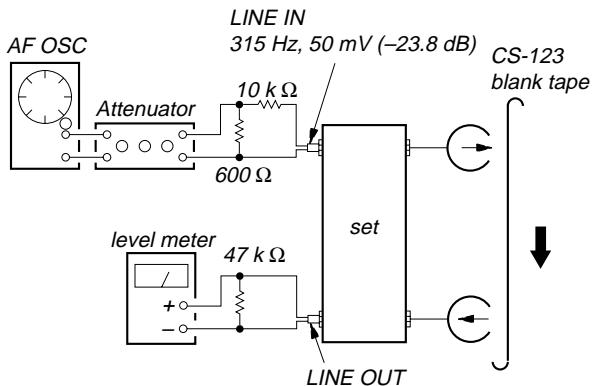
## Record Level Adjustment

### Setting:

REC LEVEL control: Standard Record (See page 10.)

### Procedure:

1. Mode: record and playback



2. Adjust RV101 (L-CH) and RV201 (R-CH) so that the reading on level meter meets the adjustment limits below.

**Adjustment Limits:**  $-23.8 \pm 0.5$  dB (47.2 to 53 mV)

### Adjustment Location: MAIN board

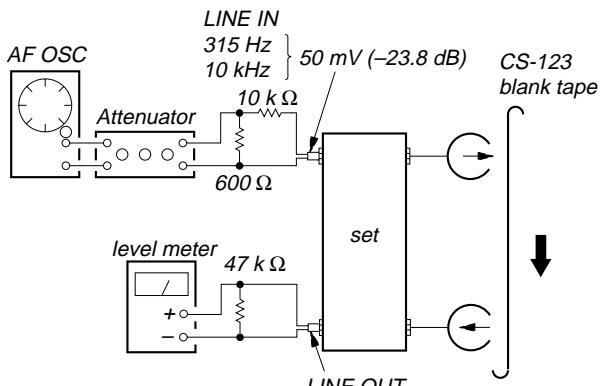
## Record EQ (IV) Adjustment

### Setting:

REC LEVEL control: Standard Record (See page 10.)

### Procedure:

1. Mode: record and playback



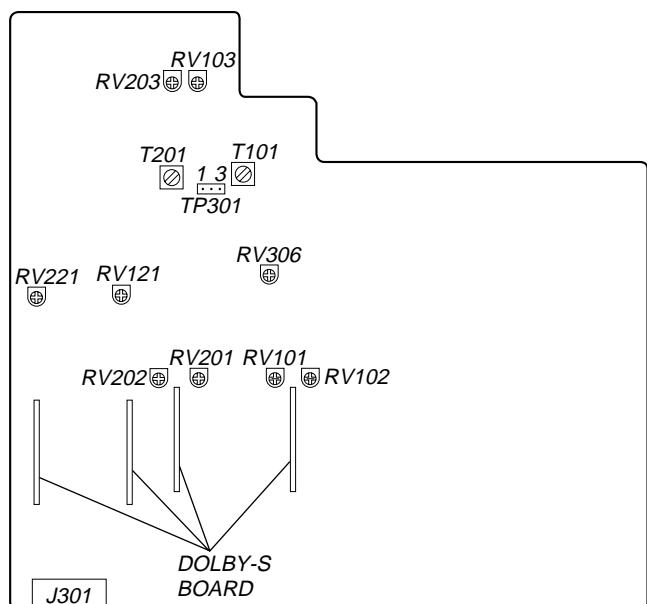
2. Adjust RV102 and RV202 so that they become maximum.
3. Adjust RV102 (L-CH) and RV202 (R-CH) so that the difference between R-CH and L-CH at 10 kHz is within 1 dB.
4. Adjust RV306 so that the R-CH meet the specification.

### Adjustment Limits:

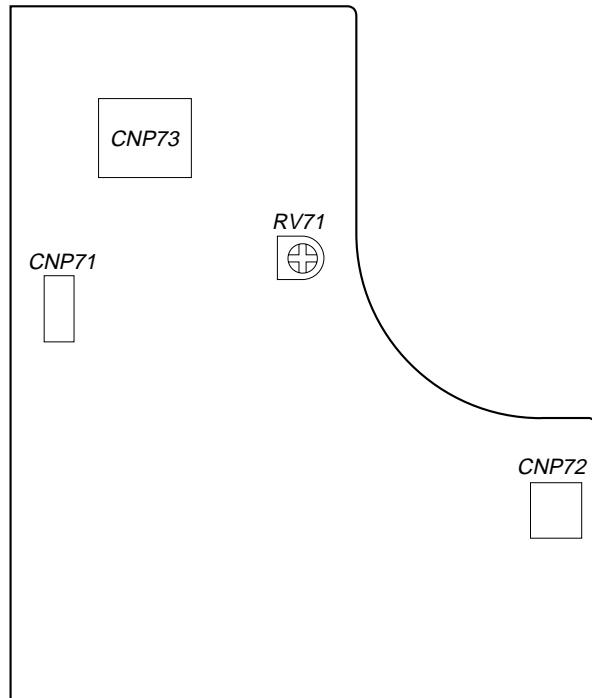
10 kHz level difference against 315 Hz reference.  
 $0 \pm 1.0$  dB

### Adjustment Location: MAIN board

### Adjustment Location: [MAIN BOARD] – COMPONENT SIDE –



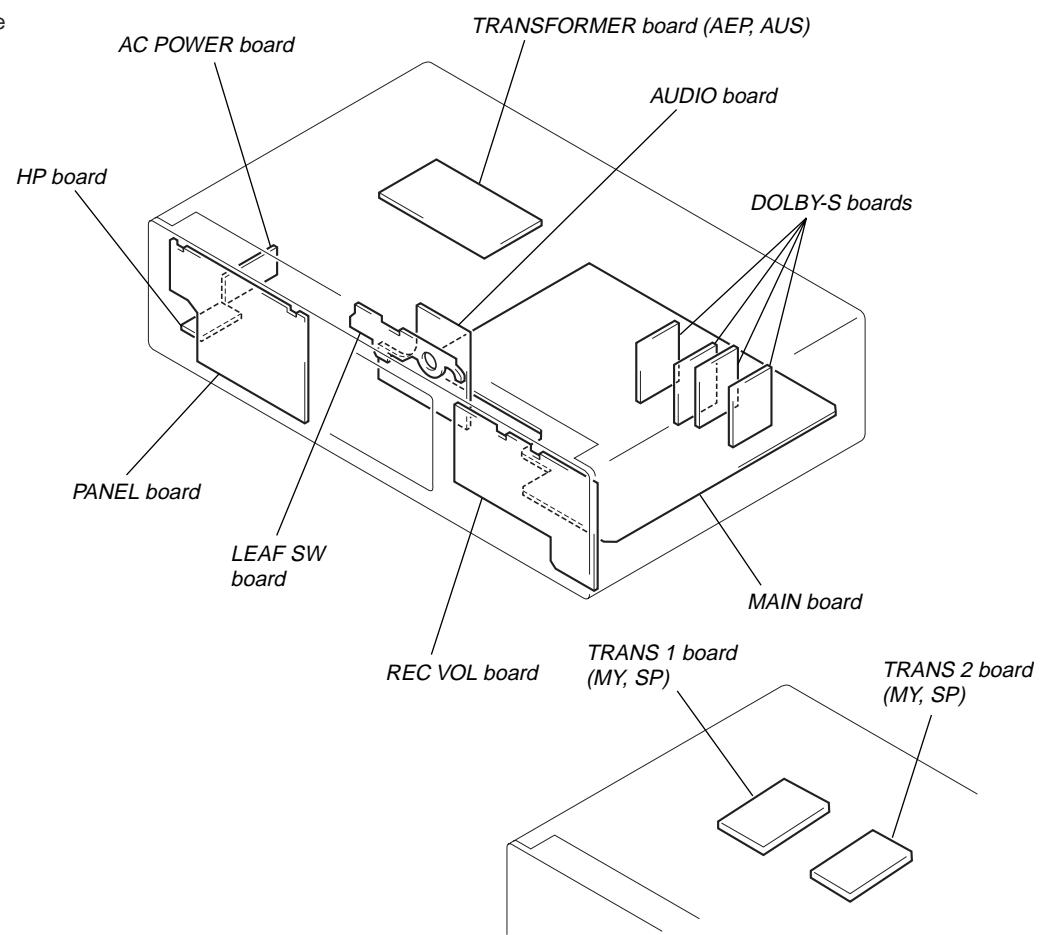
### [AUDIO BOARD] – COMPONENT SIDE –



## SECTION 5 DIAGRAMS

### Circuit Boards Location

- Abbreviation
- AUS : Australian
- MY : Malaysia
- SP : Singapore



### 5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

(In addition to this, the necessary note is each block.)

#### Note on Schematic Diagram:

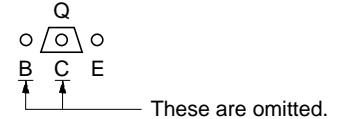
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF}$ :  $\mu\mu\text{F}$  50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4\text{W}$  or less unless otherwise specified.
- $\triangle$  : internal component.
- $\boxed{\text{WW}}$  : nonflammable resistor.
- $\boxed{\text{WW}+}$  : fusible resistor.
- $\boxed{\text{---}}$  : panel designation.

**Note:** The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

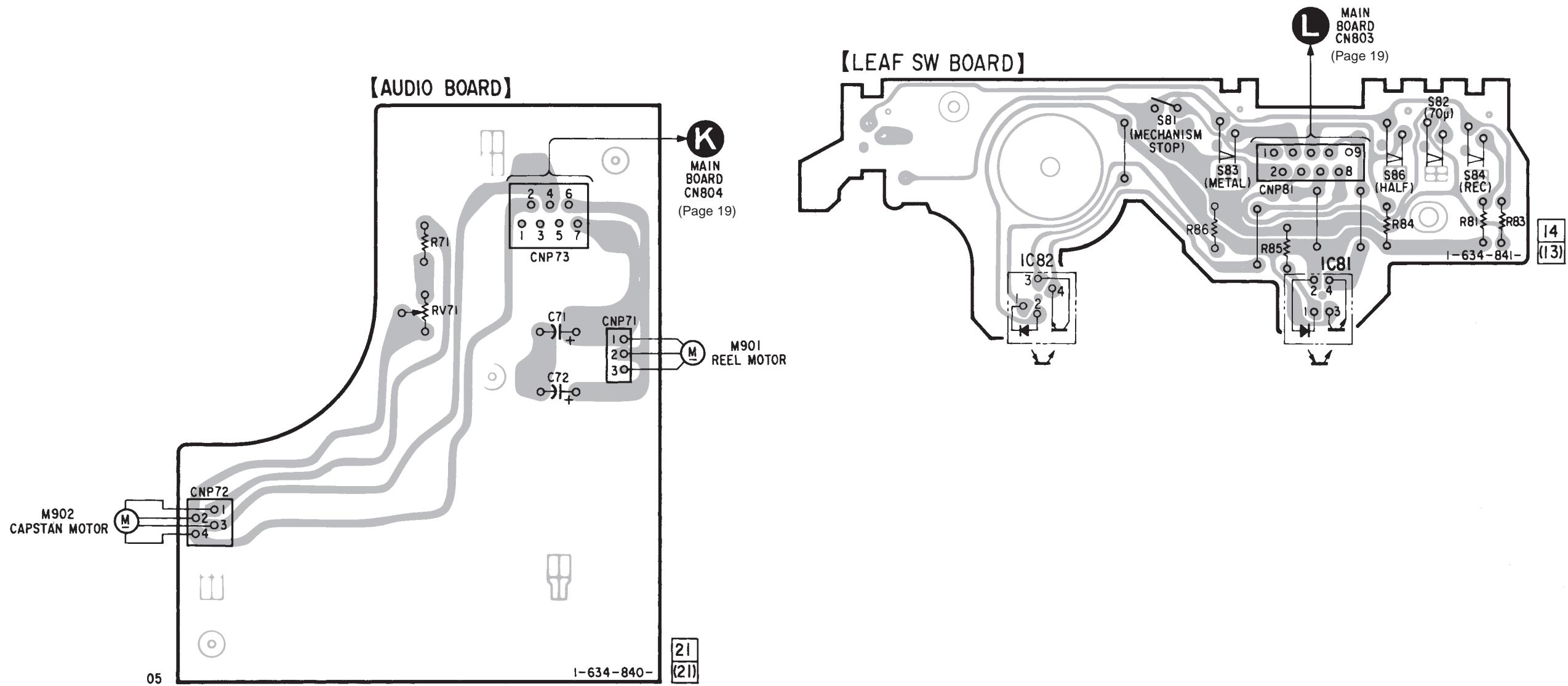
- $\boxed{\text{B}+}$  : B+ Line.
- $\boxed{\text{B}-}$  : B- Line.
- $\boxed{\text{---}}$  : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- no mark : PB
- ( ) : REC
- Voltages are taken with a VOM (Input impedance  $10\text{ M}\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\overrightarrow{\square}$  : PB
- $\overrightarrow{\square}$  : REC
- Abbreviation
- AUS : Australian model.
- MY : Malaysia model.
- SP : Singapore model.

#### Note on Printed Wiring Boards:

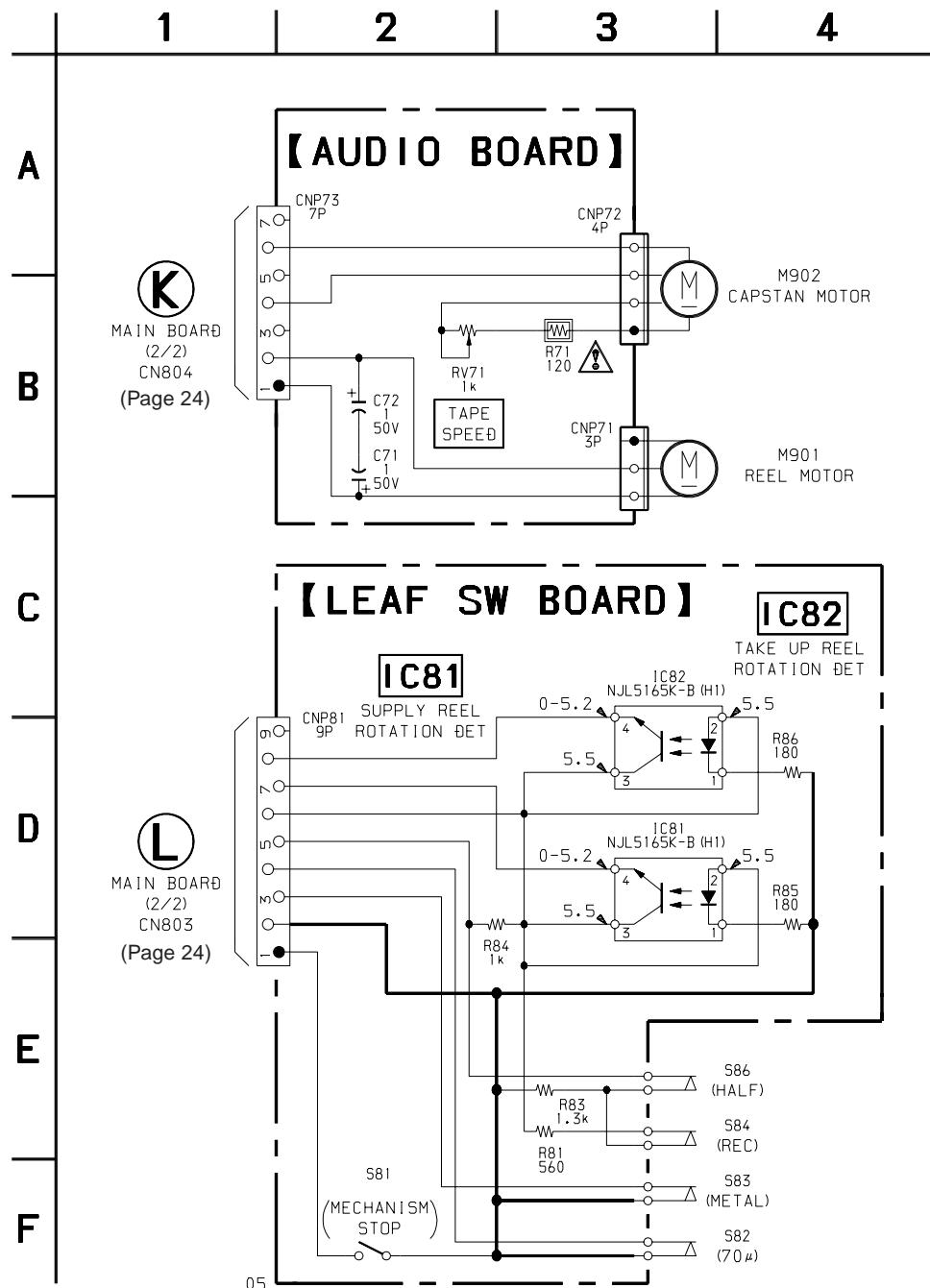
- $\circ$  : parts extracted from the component side.
- $\rule{1.5mm}{0.8mm}$  : parts extracted from the conductor side.
- $\cdots\cdots$  : Pattern from the side which enables seeing.
- Abbreviation
- AUS : Australian model.
- MY : Malaysia model.
- SP : Singapore model.
- Indication of transistor.



## 5-2. PRINTED WIRING BOARDS – MD Section – • See page 13 for Circuit Boards Location.



## 5-3. SCHEMATIC DIAGRAM – MD Section –

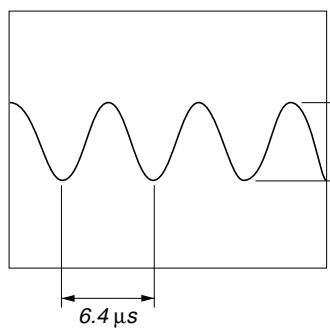


The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

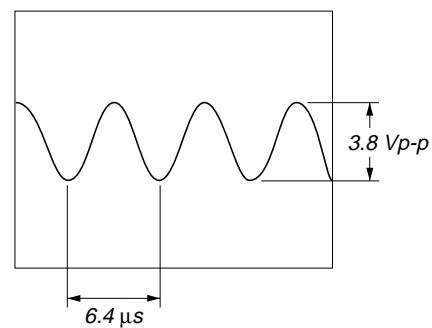
• Waveforms

– MAIN BOARD (1/2) –

① T101 ④

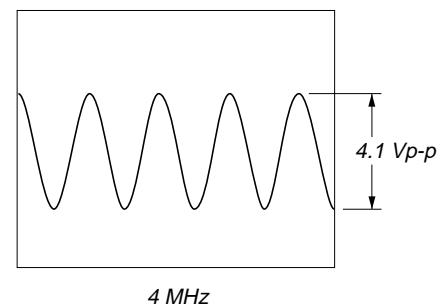


④ IC304 ⑦, ⑧

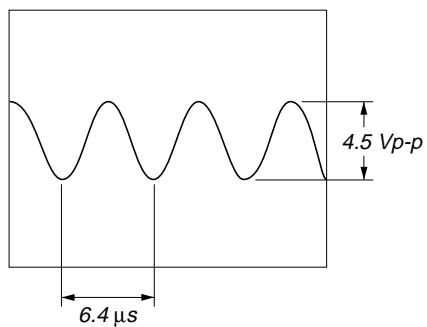


– MAIN BOARD (2/2) –

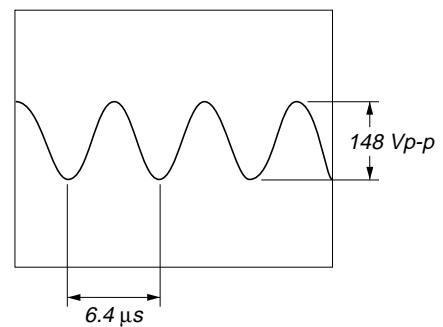
⑦ IC801 ⑩ (XIN)



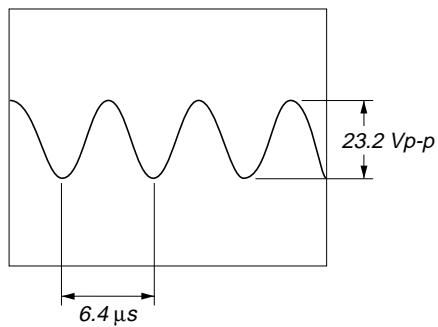
② IC304 ⑪, ⑫



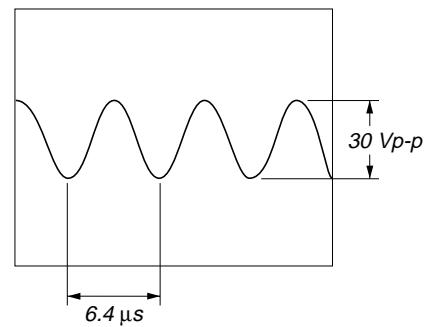
⑤ T301 ①



③ T201 ④

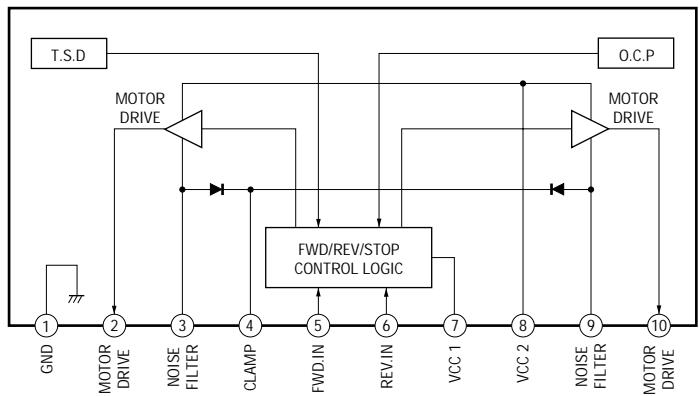


⑥ IQ310 ⑨, Q311 ⑨



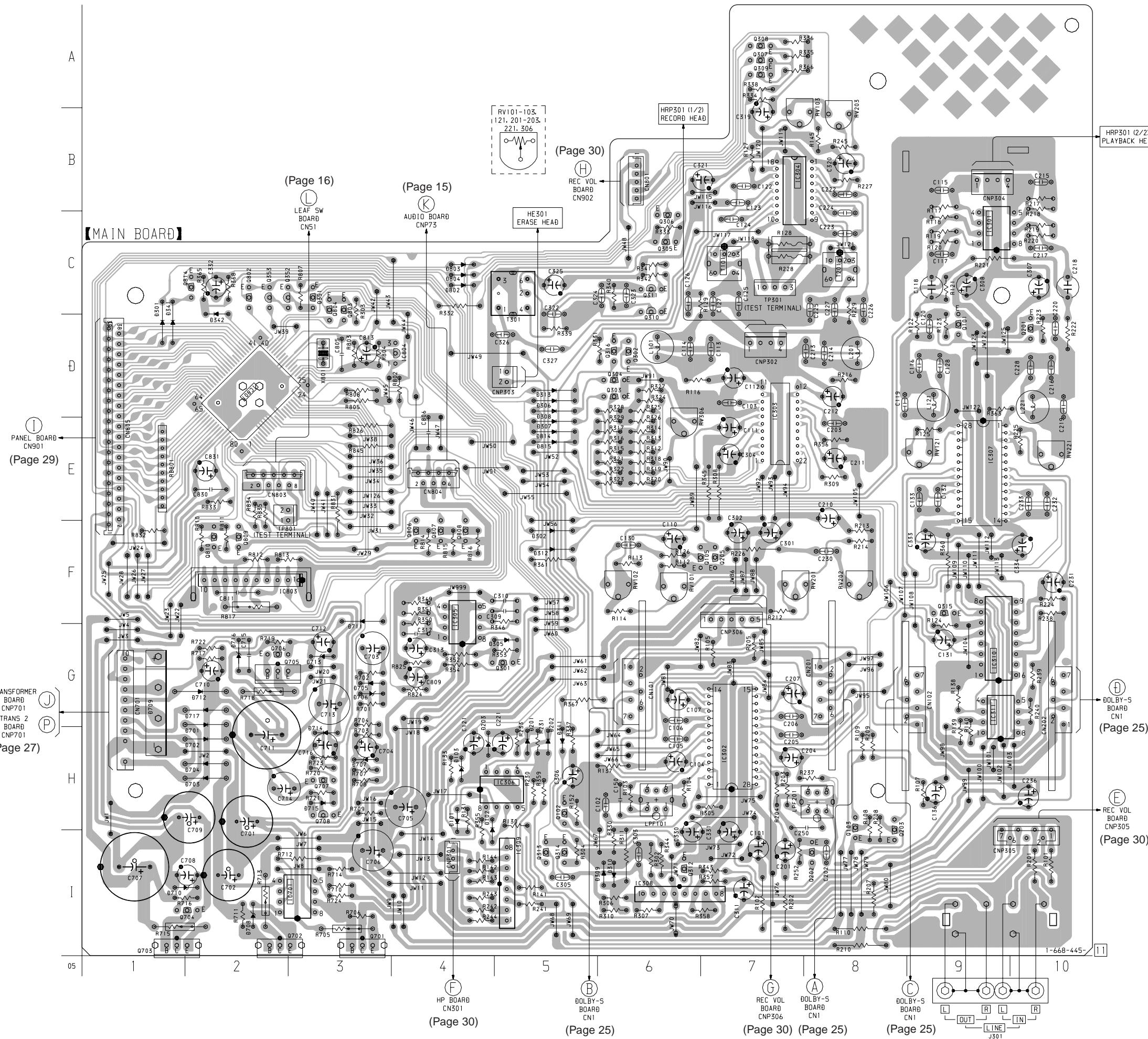
• IC Block Diagram

IC803 BA6219B (MAIN BOARD)



5-4. PRINTED WIRING BOARD - MAIN Section - • See page 13 for Circuit Boards Location.

- See page 13 for Circuit Boards Location.

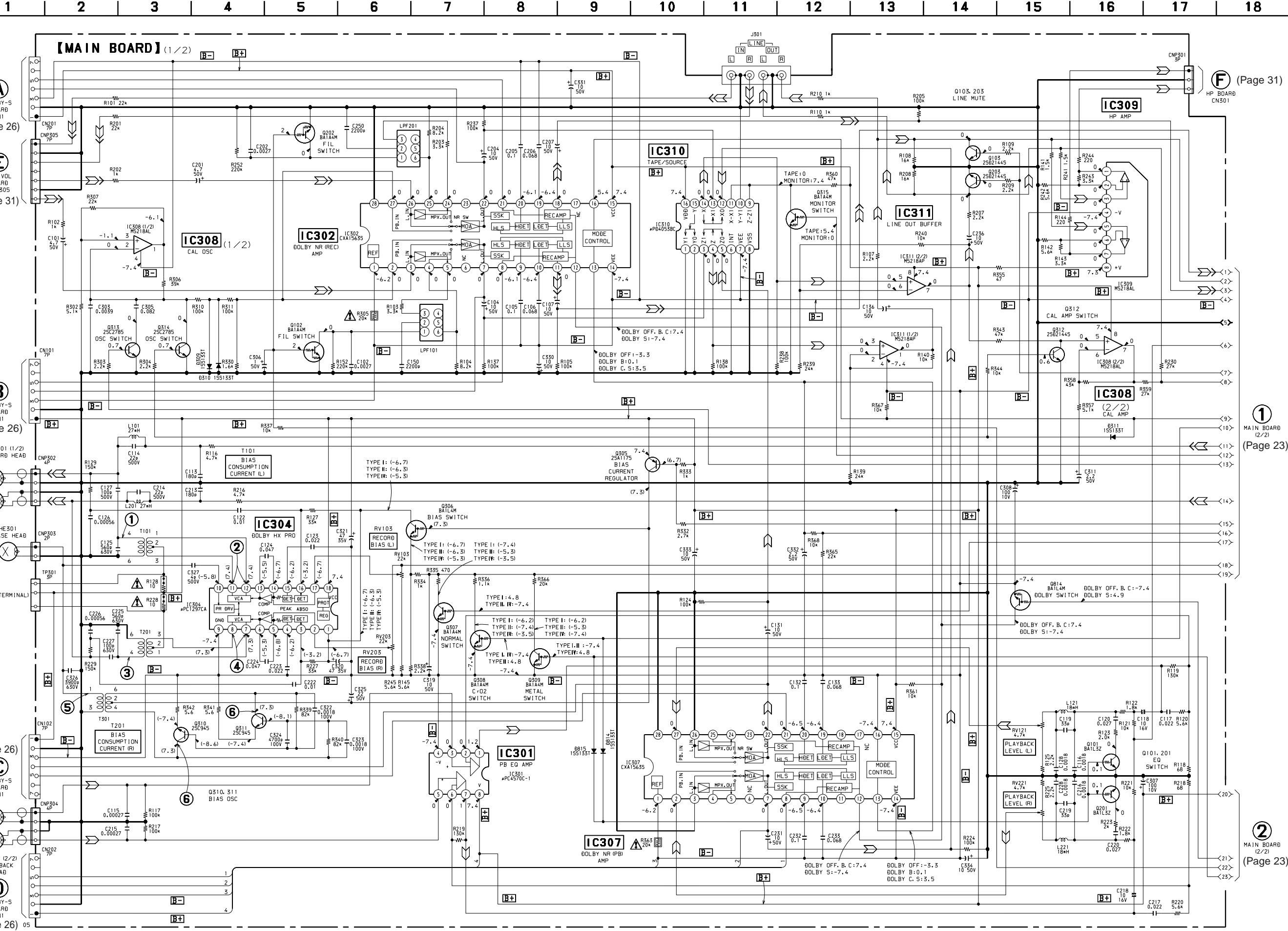


- Semiconductor Location

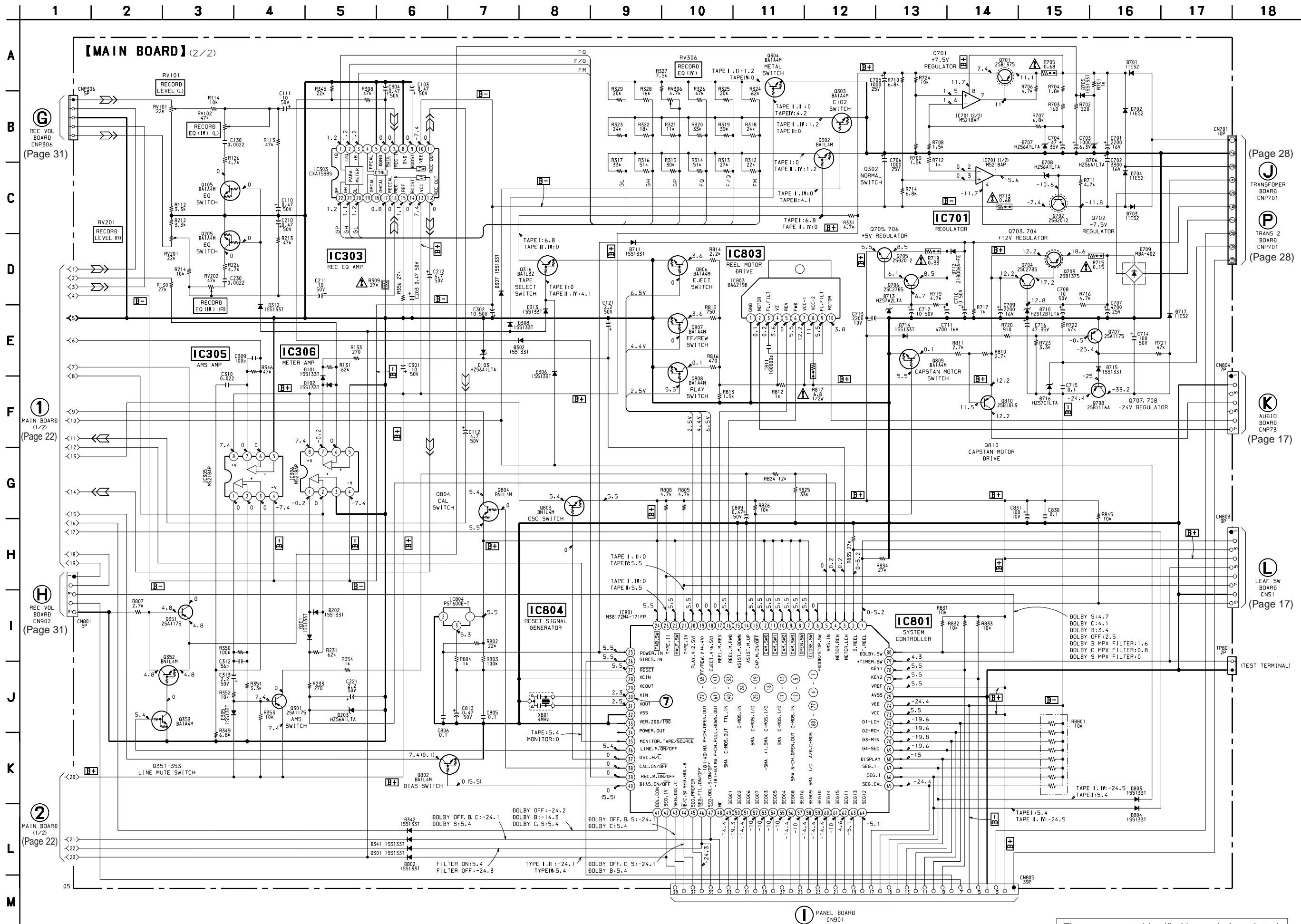
Ref. No.	Location	Ref. No.	Location
D101	H-4	IC310	G-9
D102	H-4	IC311	G-9
D103	H-4	IC701	I-3
D201	H-5	IC801	D-2
D202	H-5	IC803	F-2
D203	H-4	IC804	D-4
D301	D-1		
D302	F-5	Q101	D-9
D305	G-5	Q102	H-5
D306	D-5	Q103	H-8
D307	E-5	Q105	F-7
D308	D-5	Q201	D-10
D309	I-6	Q202	I-8
D310	I-6	Q203	I-8
D311	H-5	Q205	F-7
D312	F-5	Q301	G-5
D313	D-5	Q302	D-6
D341	D-1	Q303	D-6
D342	D-2	Q304	D-6
D701	G-2	Q305	C-6
D702	H-2	Q306	C-6
D703	H-2	Q307	A-7
D704	H-2	Q308	A-7
D705	G-3	Q309	A-7
D706	G-3	Q310	C-6
D707	H-3	Q311	C-6
D708	I-2	Q312	I-6
D709	G-1	Q313	I-5
D710	I-1	Q314	I-5
D711	F-3	Q315	F-9
D712	G-2	Q316	D-6
D713	G-3	Q351	C-3
D714	H-3	Q352	C-2
D715	H-3	Q353	C-2
D716	G-2	Q701	I-3
D717	G-2	Q702	I-2
D802	C-4	Q703	I-1
D803	C-4	Q704	I-2
D804	C-4	Q705	G-2
D814	E-5	Q706	G-2
D815	E-5	Q707	H-3
		Q708	H-3
IC301	C-9	Q802	C-2
IC302	H-7	Q803	C-3
IC303	E-7	Q804	C-3
IC304	B-7	Q806	F-4
IC305	F-4	Q807	F-4
IC306	H-5	Q808	F-4
IC307	E-9	Q809	F-2
IC308	I-6	Q810	F-2
IC309	I-5	Q814	C-2

## 5-5. SCHEMATIC DIAGRAM – MAIN Section – (1/2) • See page 18 for Waveforms.

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.



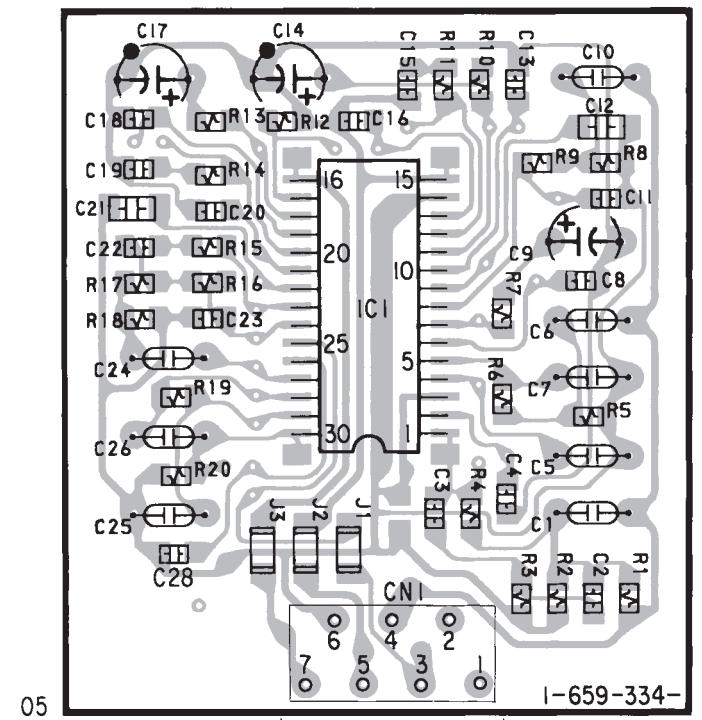
## 5-6. SCHEMATIC DIAGRAM – MAIN Section – (2/2) • See page 18 for Waveforms and IC Block Diagram.



## 5-7. PRINTED WIRING BOARD – DOLBY-S Section –

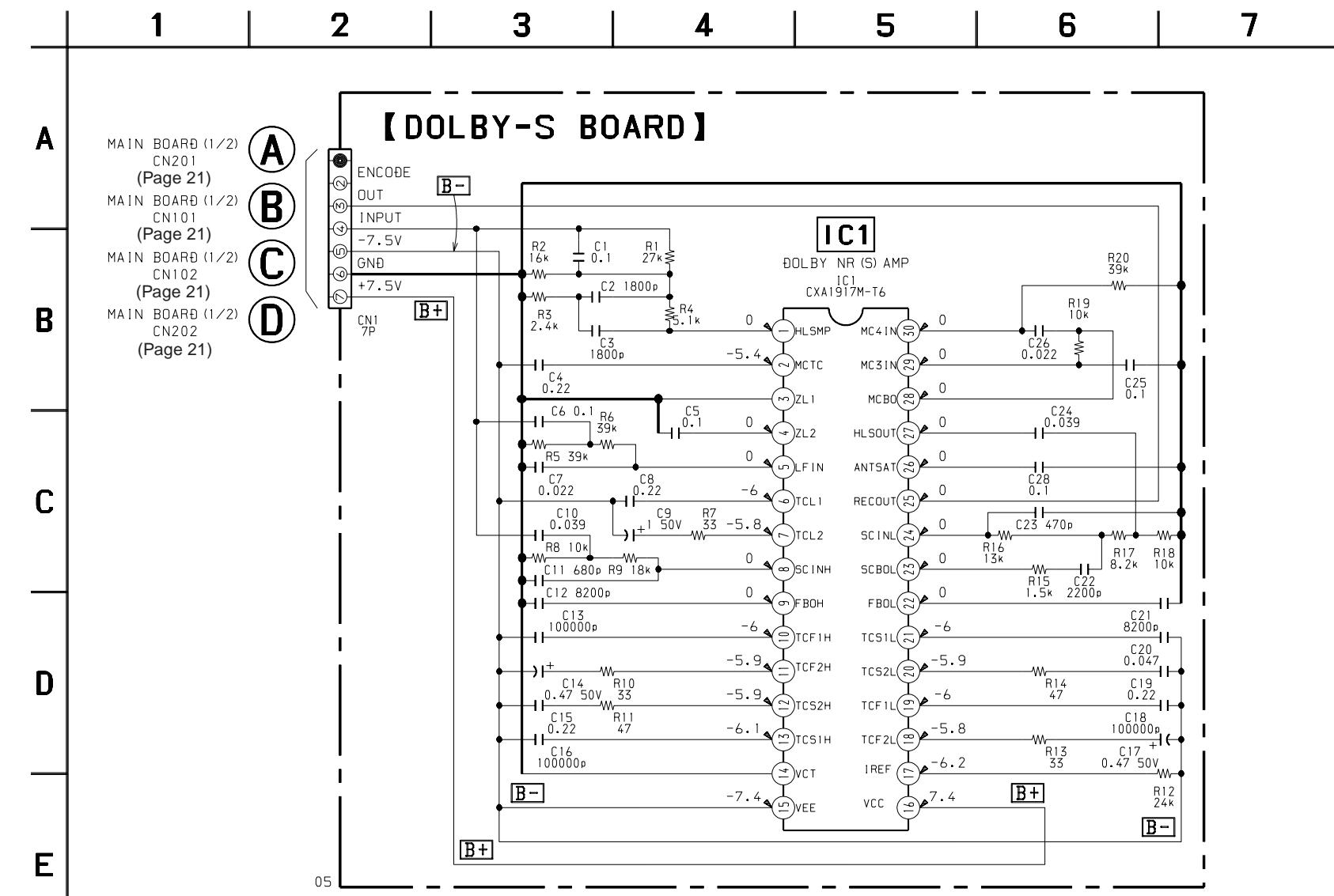
• See page 13 for Circuit Boards Location.

## [DOLBY-S BOARD]



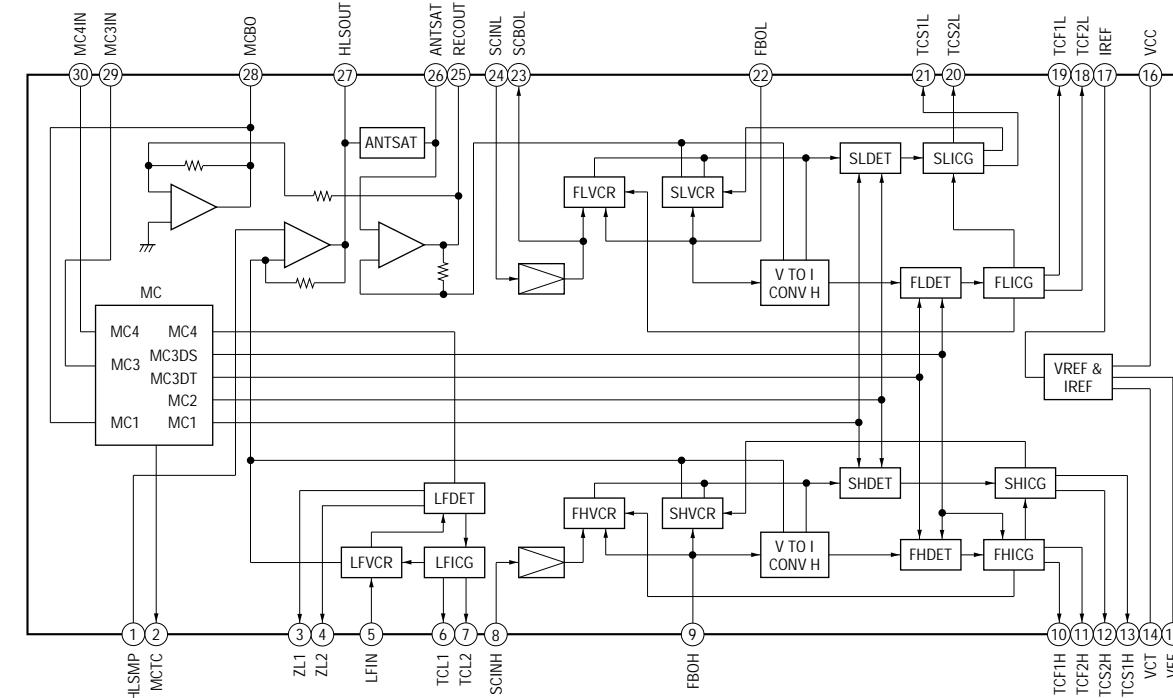
**A B C D**  
MAIN BOARD  
CN101, 102, 201, 202  
(Page 19, 20)

## 5-8. SCHEMATIC DIAGRAM – DOLBY-S Section –



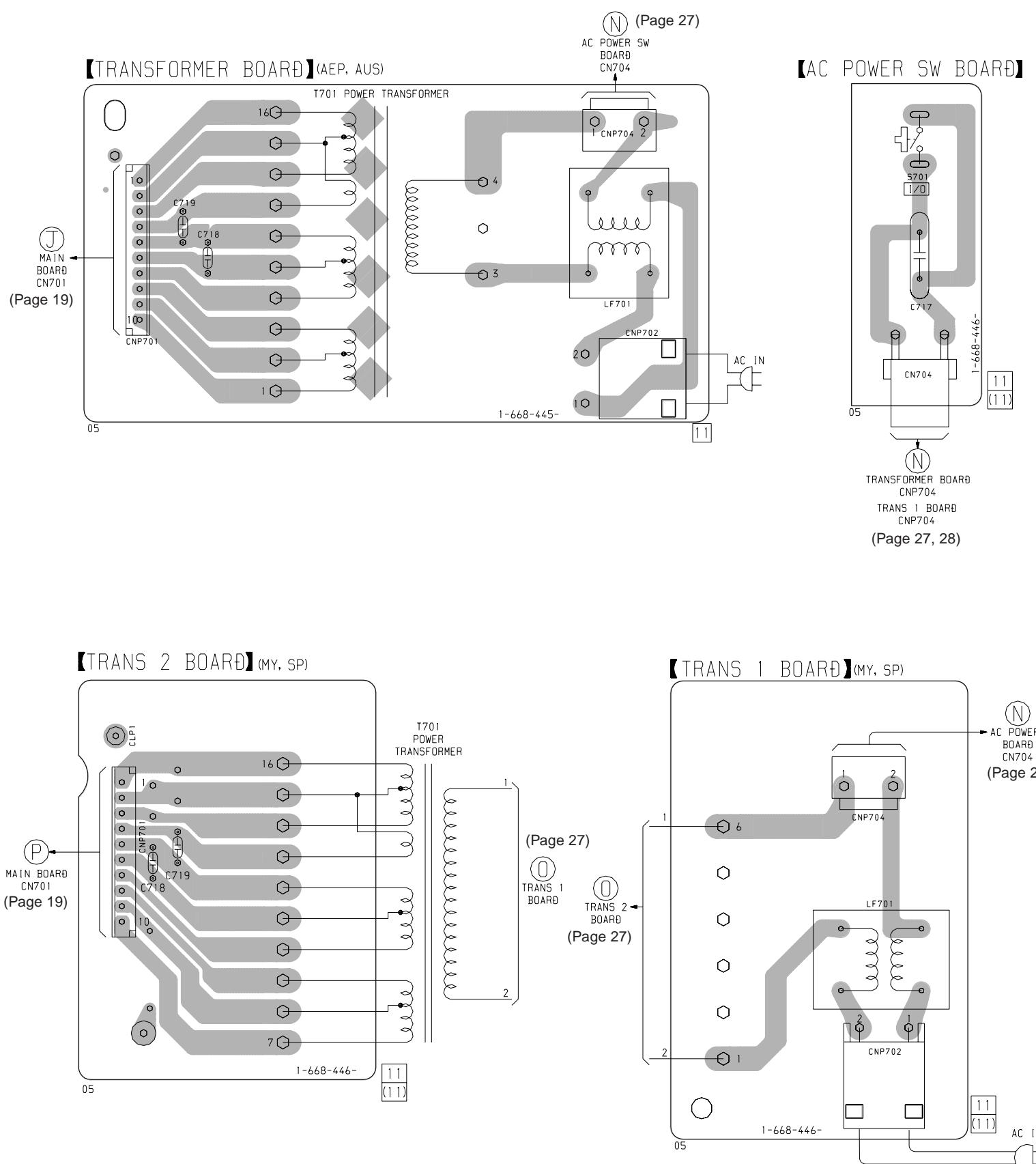
## • IC Block Diagram

## IC1 CXA1917AM-T6 (DOLBY-S BOARD)

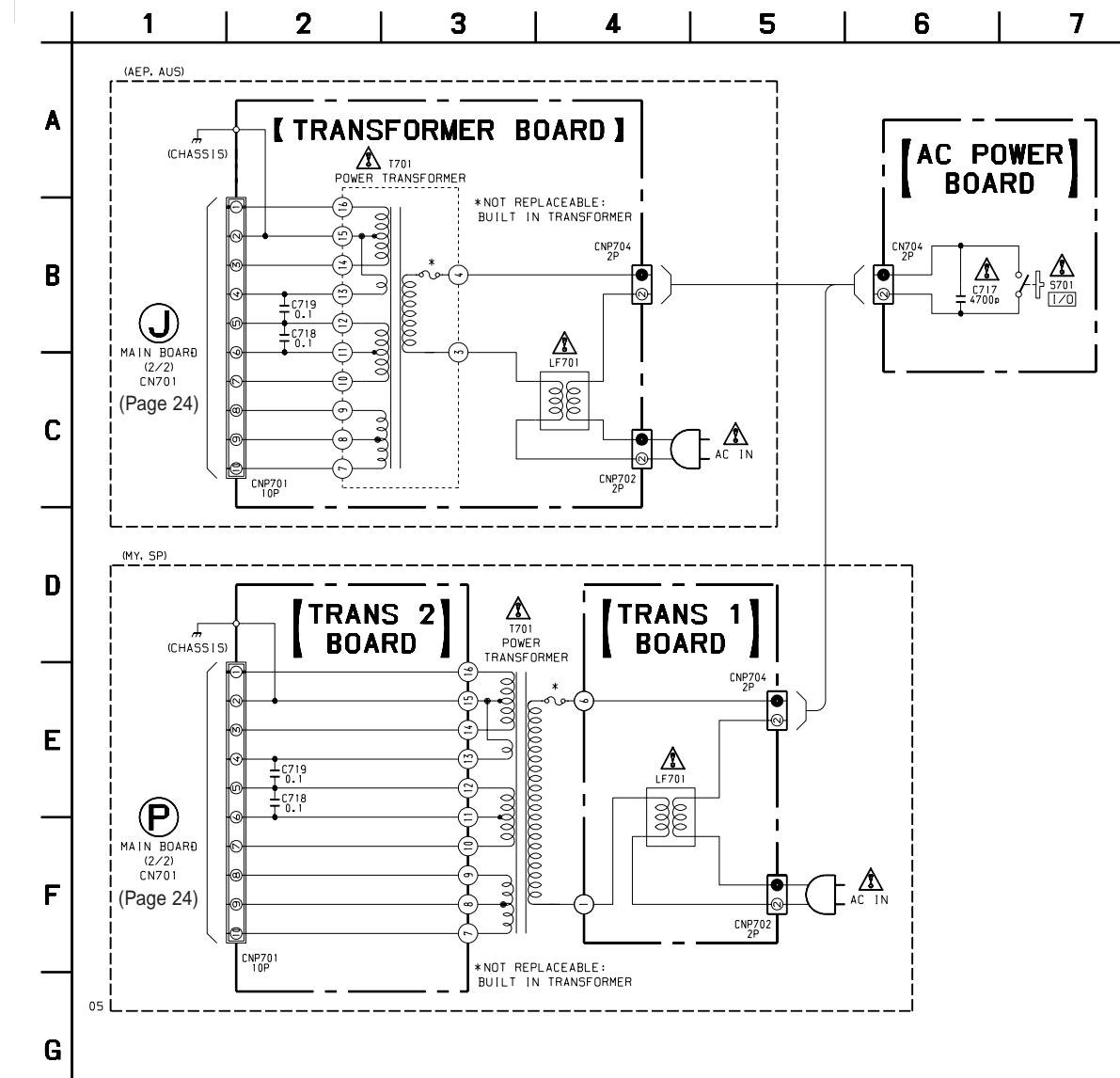


## 5-9. PRINTED WIRING BOARDS – POWER Section –

• See page 13 for Circuit Boards Location.

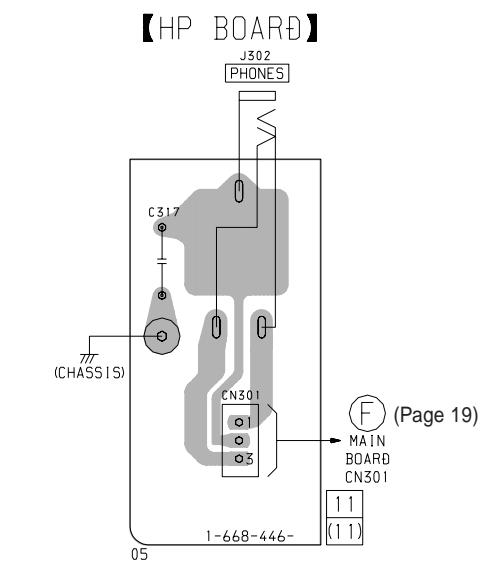
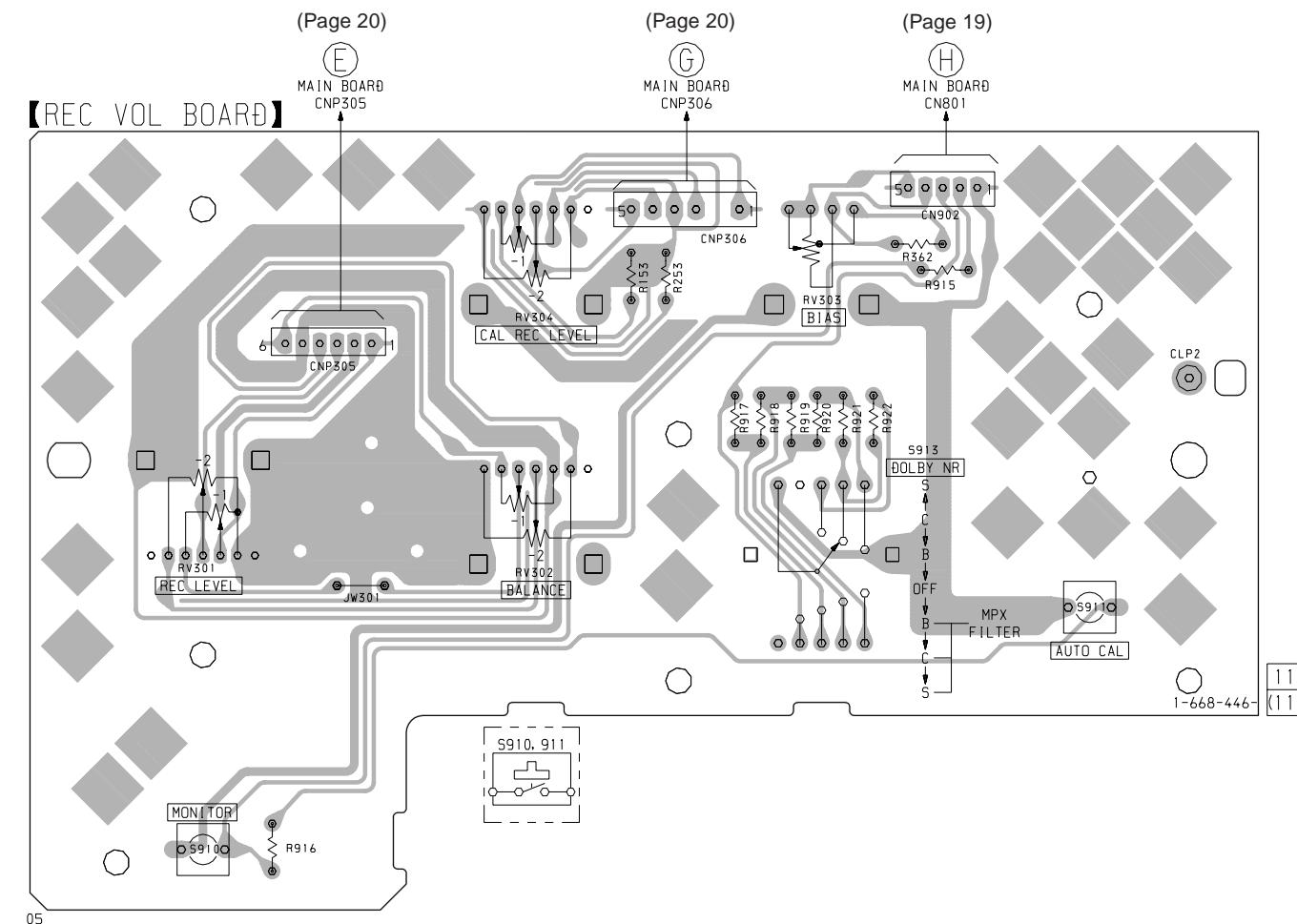
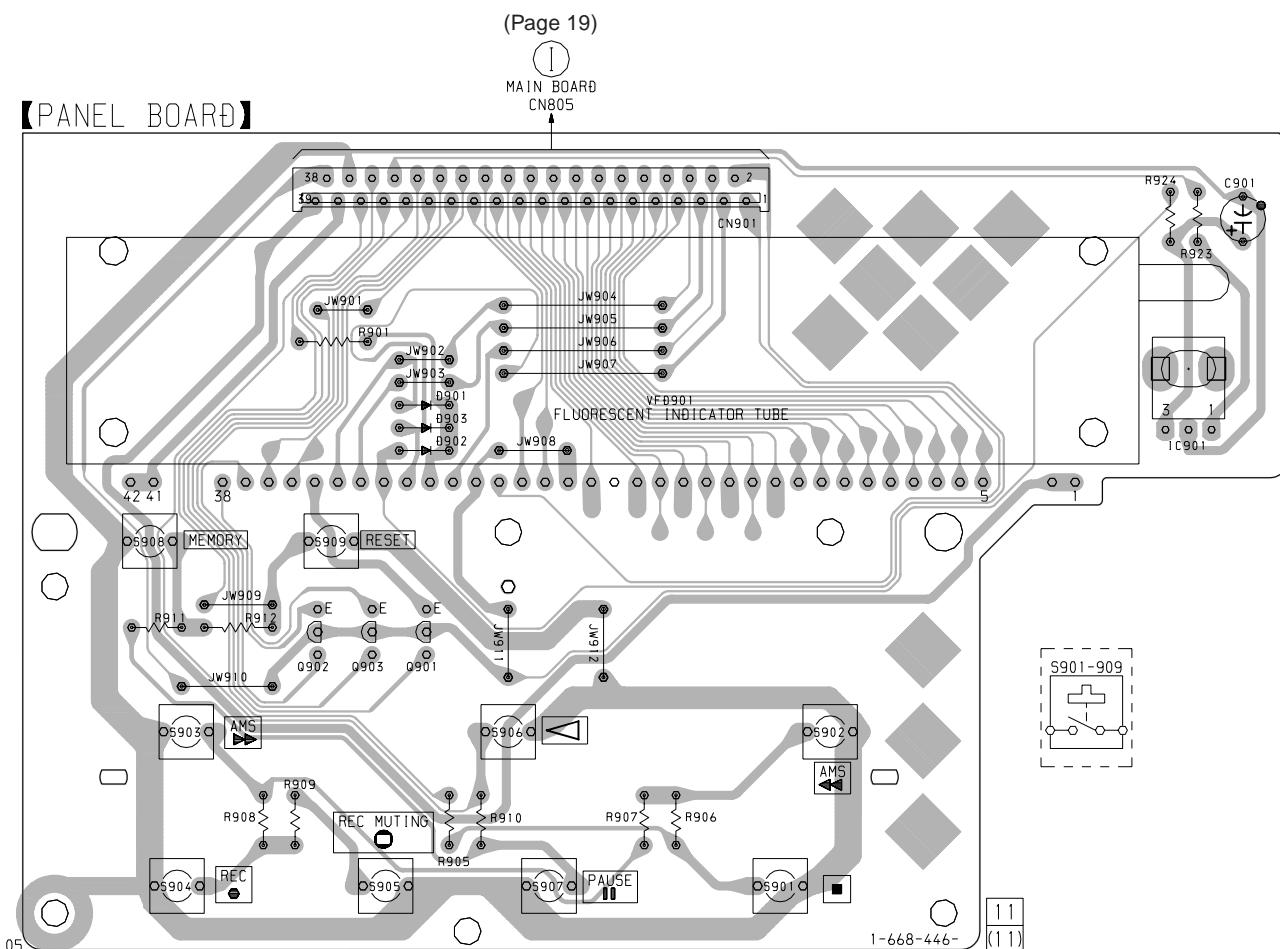


## 5-10. SCHEMATIC DIAGRAM – POWER Section –

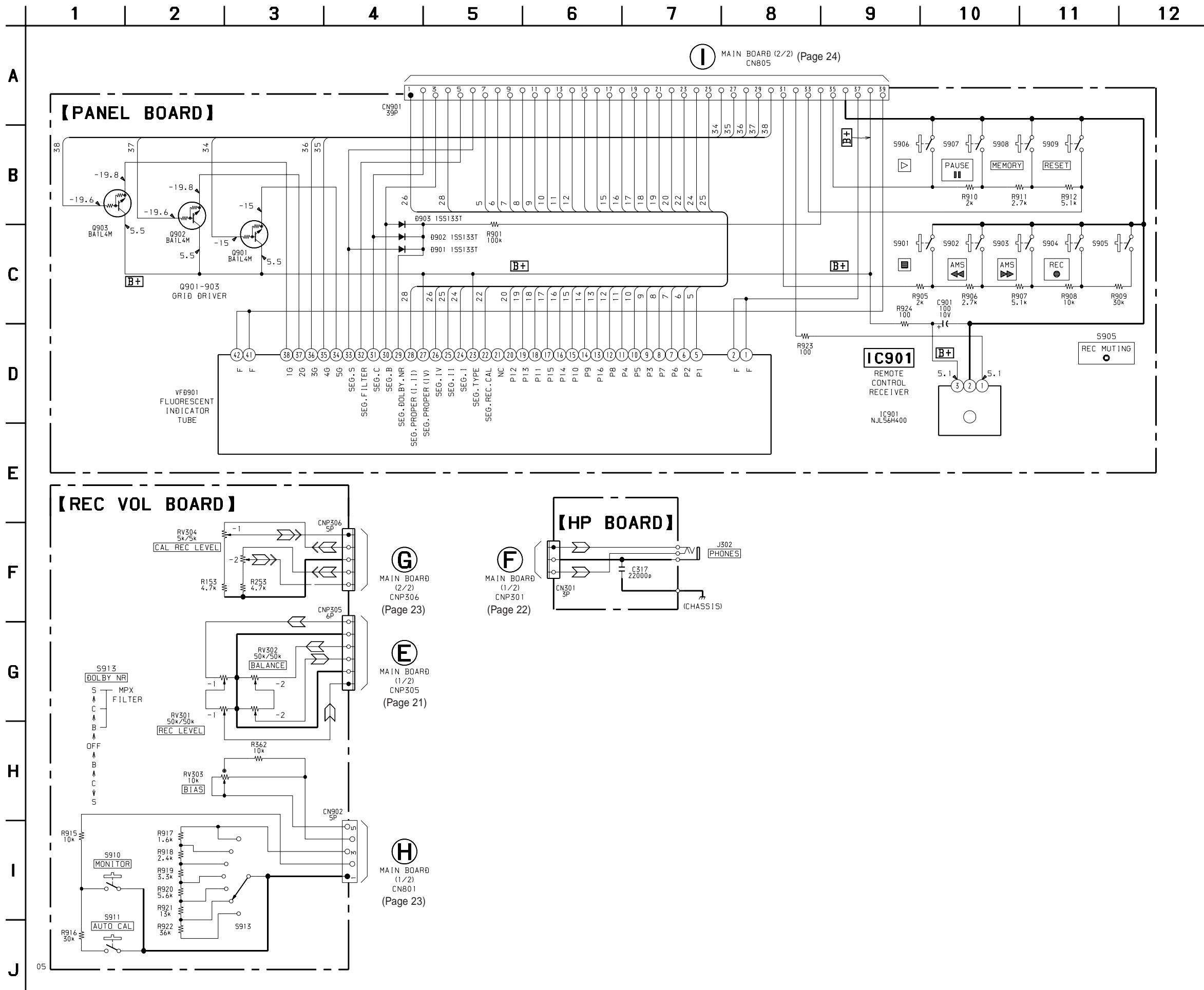


The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety. Replace only with part number specified.

## 5-11. PRINTED WIRING BOARDS – PANEL Section – • See page 13 for Circuit Boards Location.



## 5-12. SCHEMATIC DIAGRAM – PANEL Section –



### 5-13. IC PIN FUNCTION DESCRIPTION

#### • MAIN BOARD IC801 M38172M4-171FP (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1	T.REEL	I	Take-up reel rotation pulse input from the rotation detect sensor (IC82)
2	S.REEL	I	Supply reel rotation pulse input from the rotation detect sensor (IC81)
3	METER.LCH	I	Signal input for the level meter drive (L-ch)
4	METER.RCH	I	Signal input for the level meter drive (R-ch)
5	AMS.IN	I	Auto music sensor signal input terminal "H": AMS detect
6	DOOR/STOP.SW	I	Mechanism stop detect switch (S81) input terminal
7	CLOSE.SW	I	Not used (fixed at "H")
8	OPEN.SW	I	Not used (fixed at "H")
9	CAM.SW3	I	Not used (fixed at "H")
10	CAM.SW2	I	Not used (fixed at "H")
11	CAM.SW1	I	Not used (fixed at "H")
12	CAM.SW0	I	Not used (fixed at "H")
13	CAP.M ON/OFF	O	Capstan motor (M902) on/off control signal output terminal "H": motor on
14	ASIST.M.UP	O	Assist motor drive signal output terminal Not used (pull down)
15	ASIST.M.DOWN	O	Assist motor drive signal output terminal Not used (pull down)
16	REEL.M.FWD	O	Reel motor (M901) drive signal output to the BA6219B (IC803)
17	REEL.M.REV	O	Reel motor (M901) drive signal output to the BA6219B (IC803)
18	EJECT.V (6.5V)	O	Reel motor (M901) eject control signal output terminal "H" active
19	FF/REW.V (4.4V)	O	Reel motor (M901) FF/REW control signal output terminal "H" active
20	PLAY.V (2.5V)	O	Reel motor (M901) play control signal output terminal "H" active
21	TYPE.IV	I	Metal detect switch (S83) input terminal "H": metal
22	HALF.SW	I	Half detect switch input terminal Not used (fixed at "H")
23	TYPE.II	I	CrO <sub>2</sub> detect switch (S82) input terminal "H": CrO <sub>2</sub>
24	TAB.SW	I	Not used (fixed at "H")
25	POWER.IN	I	AC in detect signal input terminal "H": AC in
26	SIRCS.IN	I	Sircs signal input from the remote control receiver (IC901)
27	RESET	I	System reset signal input from the reset signal generator (IC804) "L": reset "L" is input for several 100 msec after power on, then it changes to "H"
28	XCIN	I	Sub system clock input terminal Not used (fixed at "L")
29	XCOUT	O	Sub system clock output terminal Not used (open)
30	XIN	I	Main system clock input terminal (4 MHz)
31	XOUT	O	Main system clock output terminal (4 MHz)
32	VSS	—	Ground terminal
33	VER.200/190	I	Setting terminal for the version (fixed at "L")
34	POWER.OUT	O	Power on/off control signal output terminal "L": power on Not used (open)
35	MONITOR.TAPE/ SOURCE	O	Audio monitor selection signal output terminal "H": tape monitor, "L": source monitor
37	OSC H/L	O	Calibration tone frequency high/low control signal output terminal "L": frequency low
38	CAL.ON/OFF	O	Calibration tone on/off control signal output terminal "H": on, "L": off
39	REC.M.ON/OFF	O	Record muting on/off control signal output to the CXA1598S (IC303) "L": record muting on
40	BIAS.ON/OFF	O	Recording bias on/off control signal output terminal "H": bias on
41	DOL.CON	O	Dolby B/C type or dolby on/off selection signal output to the CXA1563S (IC302, 307) "H": dolby C type, "L": dolby off (center voltage: dolby B type)
42	SEG.IV	O	Metal on/off control signal output or segment drive signal output to the fluorescent indicator tube (VFD901) (for TYPE IV light up)

Pin No.	Pin Name	I/O	Function
43	SEG.DOL.C	O	Segment drive signal output to the fluorescent indicator tube (VFD901) (for DOLBY NR C light up)
44	SEG.DOL.B	O	Segment drive signal output to the fluorescent indicator tube (VFD901) (for DOLBY NR B light up)
45	SEG.PROPER	O	Segment drive signal output to the fluorescent indicator tube (VFD901) (for TYPE I, II light up)
46	SEG.FIL.ON/OFF	O	Multiplex filter on/off control signal output or segment drive signal output to the fluorescent indicator tube (VFD901) (for FILTER light up) "H": multiplex filter on
47	SEG.DOL.S. ON/OFF	O	Dolby S type on/off selection signal output to the CXA1563S (IC302, 307) or segment drive signal output to the fluorescent indicator tube (VFD901) (for DOLBY NR S light up) "L": dolby S on
48	NC	O	Not used (open)
49	SEG01	O	Segment drive signal output to the fluorescent indicator tube (VFD901)
50	SEG02	O	
51	SEG06	O	
52	SEG07	O	
53	SEG03	O	
54	SEG05	O	
55	SEG04	O	
56	SEG08	O	
57	SEG16	O	
58	SEG09	O	
59	SEG10	O	
60	SEG14	O	
61	SEG15	O	
62	SEG11	O	
63	SEG13	O	
64	SEG12	O	
65	SEG.CAL	O	Segment drive signal output to the fluorescent indicator tube (VFD901) (for CAL light up)
66	SEG.I	O	Recording equalizer type I select signal output or segment drive signal output to the fluorescent indicator tube (VFD901) (for TYPE I light up)
67	SEG.II	O	Recording equalizer type II select signal output or segment drive signal output to the fluorescent indicator tube (VFD901) (for TYPE II light up)
68	G5-DISPLAY	O	Grid drive signal output to the fluorescent indicator tube (VFD901)
69	G4-SEC	O	
70	G3-MIN	O	
71	G2-RCH	O	
72	G1-LCH	O	
73	VCC	—	
74	VEE	—	
75	AVSS	—	
76	VREF	I	
77	KEY2	I	
78	KEY1	I	
79	TIMER.SW	I	
80	DOLBY.SW	I	DOLBY NR switch (S913) input terminal (A/D input)

## **SECTION 6**

# **EXPLODED VIEWS**

**NOTE:**

- XX and -X mean standardized parts, so they may have some difference from the original one.
  - Color Indication of Appearance Parts  
Example:  
KNOB, BALANCE (WHITE) . . . (RED)  

↑	↑
Parts	Color

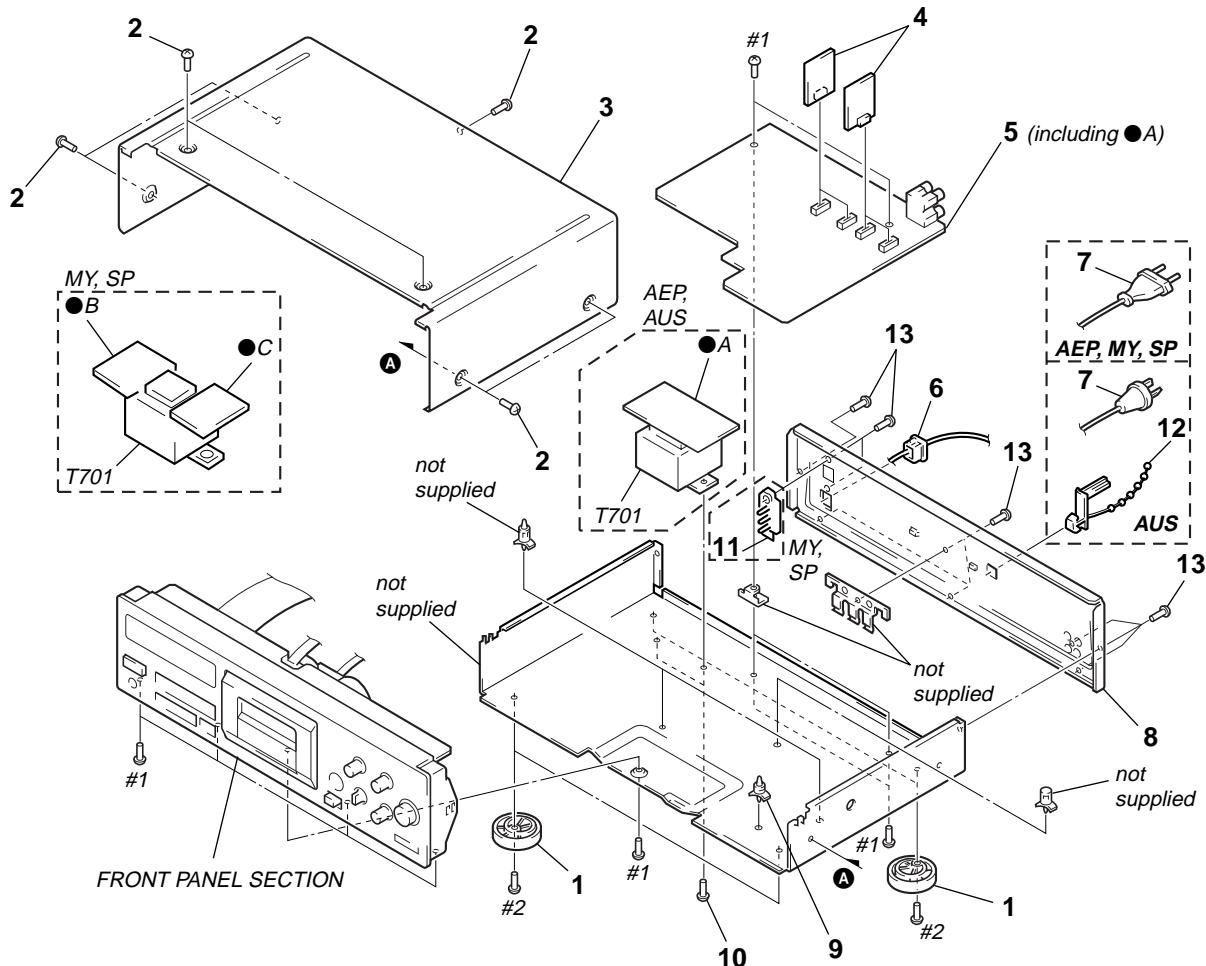
 Cabinet's Color
  - Abbreviation  
AUS : Australian  
MY : Malaysia  
SP : Singapore

- Items marked “\*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - The mechanical parts with no reference number in the exploded views are not supplied.
  - Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

## (1) CASE, CHASSIS SECTION

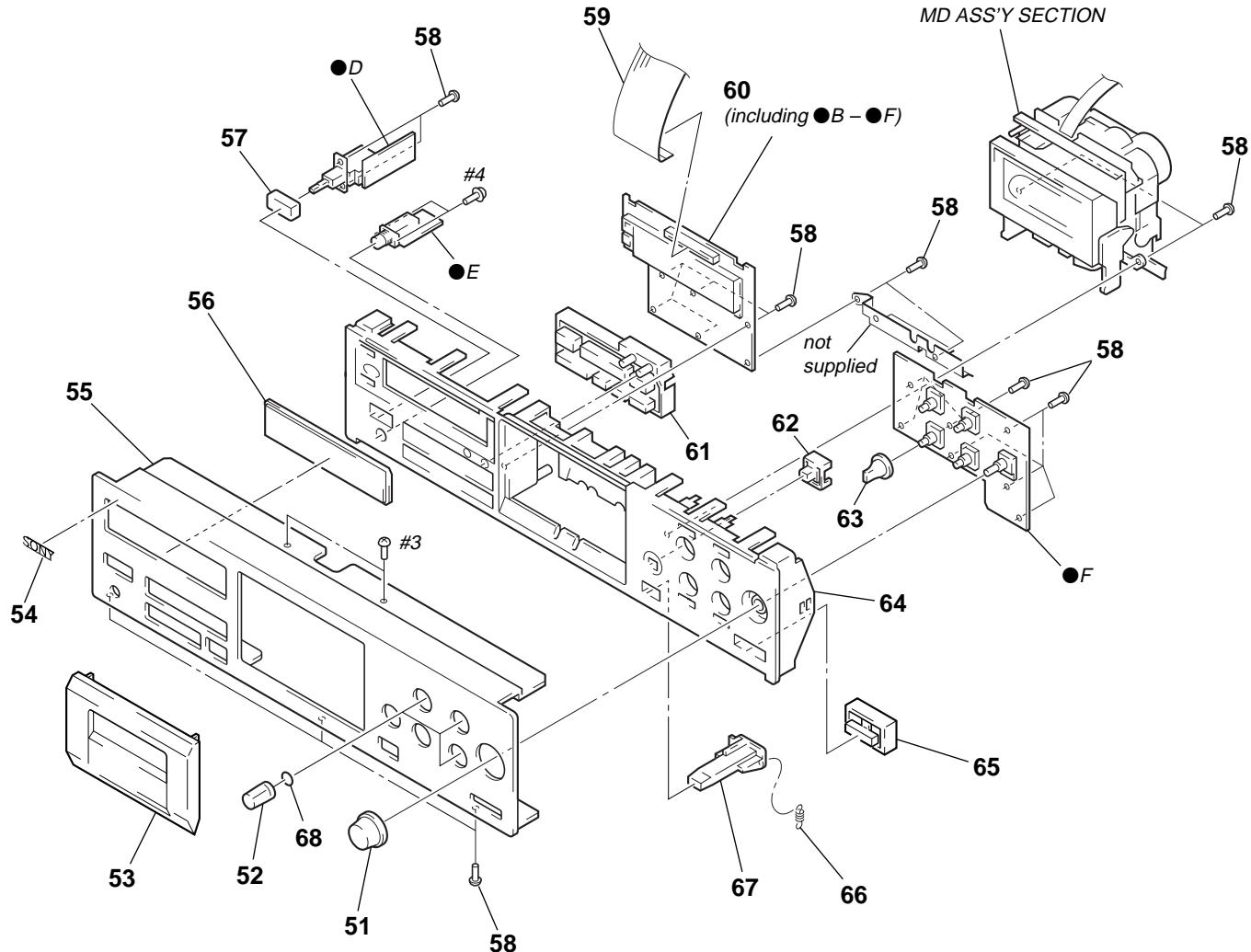
- A: TRANSFORMER BOARD (AEP, AUS)
  - B: TRANS 1 BOARD (MY, SP)
  - C: TRANS 2 BOARD (MY, SP)



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
1	X-4949-523-1	FOOT ASSY (F50180S)		* 8	3-020-984-01	PANEL, BACK (AEP)	
2	3-710-901-11	SCREW, TAPPING (BLACK)		* 8	3-020-984-22	PANEL, BACK (AUS)	
2	3-710-901-01	SCREW, TAPPING (SILVER)		* 8	3-020-984-31	PANEL, BACK (MY,SP)	
* 3	3-021-377-01	CASE (BLACK)		* 9	3-703-353-02	SUPPORT, PC BOARD	
* 3	3-021-377-21	CASE (SILVER)		10	3-703-249-21	SCREW, S TIGHT, +PTTWH (M3X8)	
* 4	A-2007-481-A	DOLBY-S BOARD, COMPLETE		△ 11	1-692-155-11	SELECTOR, POWER VOLTAGE (MY,SP)	
* 5	A-2007-776-A	MAIN BOARD, COMPLETE (AEP,AUS)		12	4-956-370-12	BAND, PLUG FIXED (AUS)	
* 5	A-2007-778-A	MAIN BOARD, COMPLETE (MY,SP)		13	3-704-515-21	SCREW (BV/RING)	
6	4-966-267-11	BUSHING (FBS001), CORD		△ T701	1-431-668-11	TRANSFORMER, POWER (AEP)	
△ 7	1-575-651-21	CORD, POWER (AEP,MY,SP)		△ T701	1-431-737-11	TRANSFORMER, POWER (AUS)	
△ 7	1-696-845-11	CORD, POWER (AUS)		△ T701	1-431-738-11	TRANSFORMER, POWER (MY,SP)	

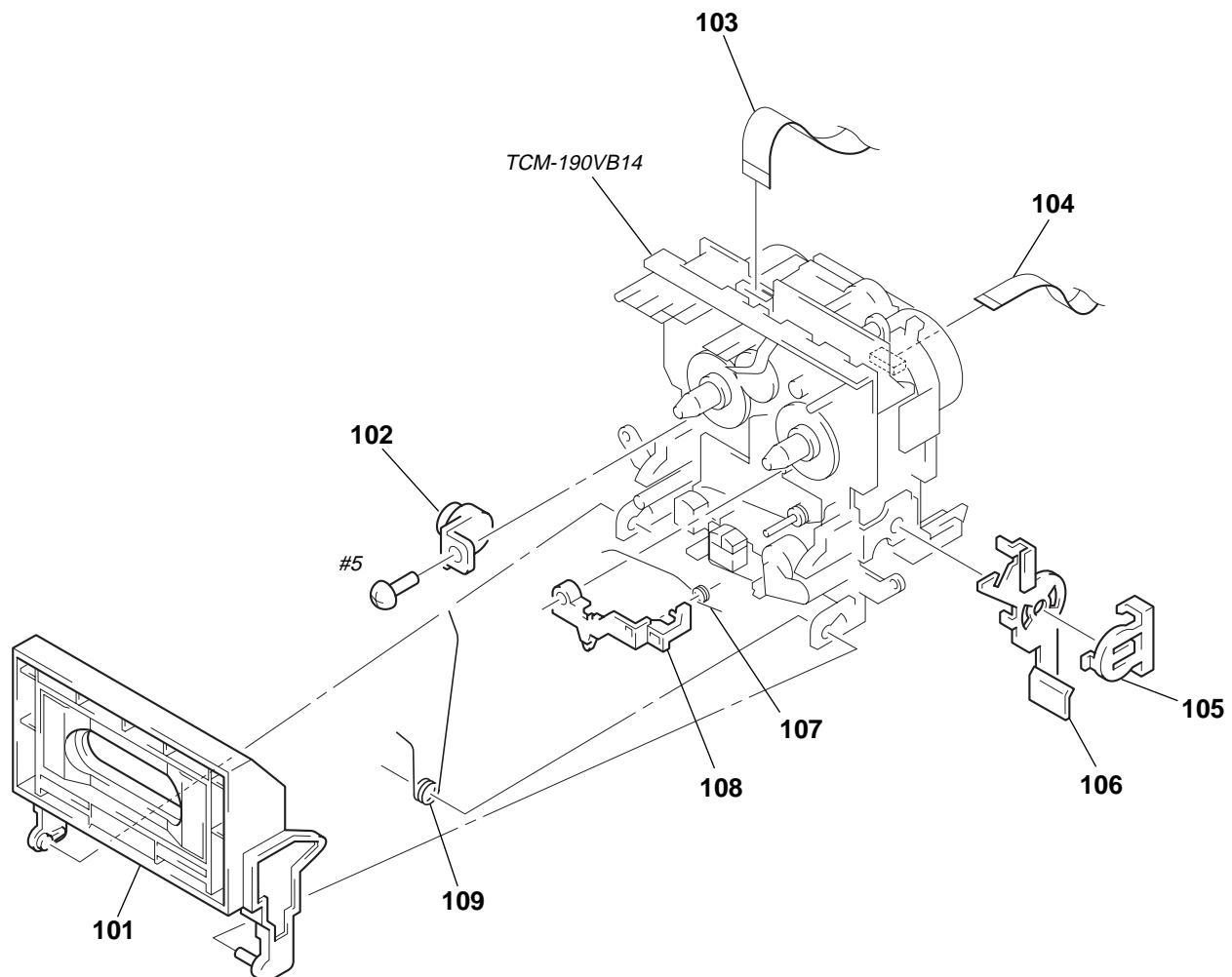
## **(2) FRONT PANEL SECTION**

- D: AC POWER BOARD
  - E: HP BOARD
  - F: REC VOL BOARD



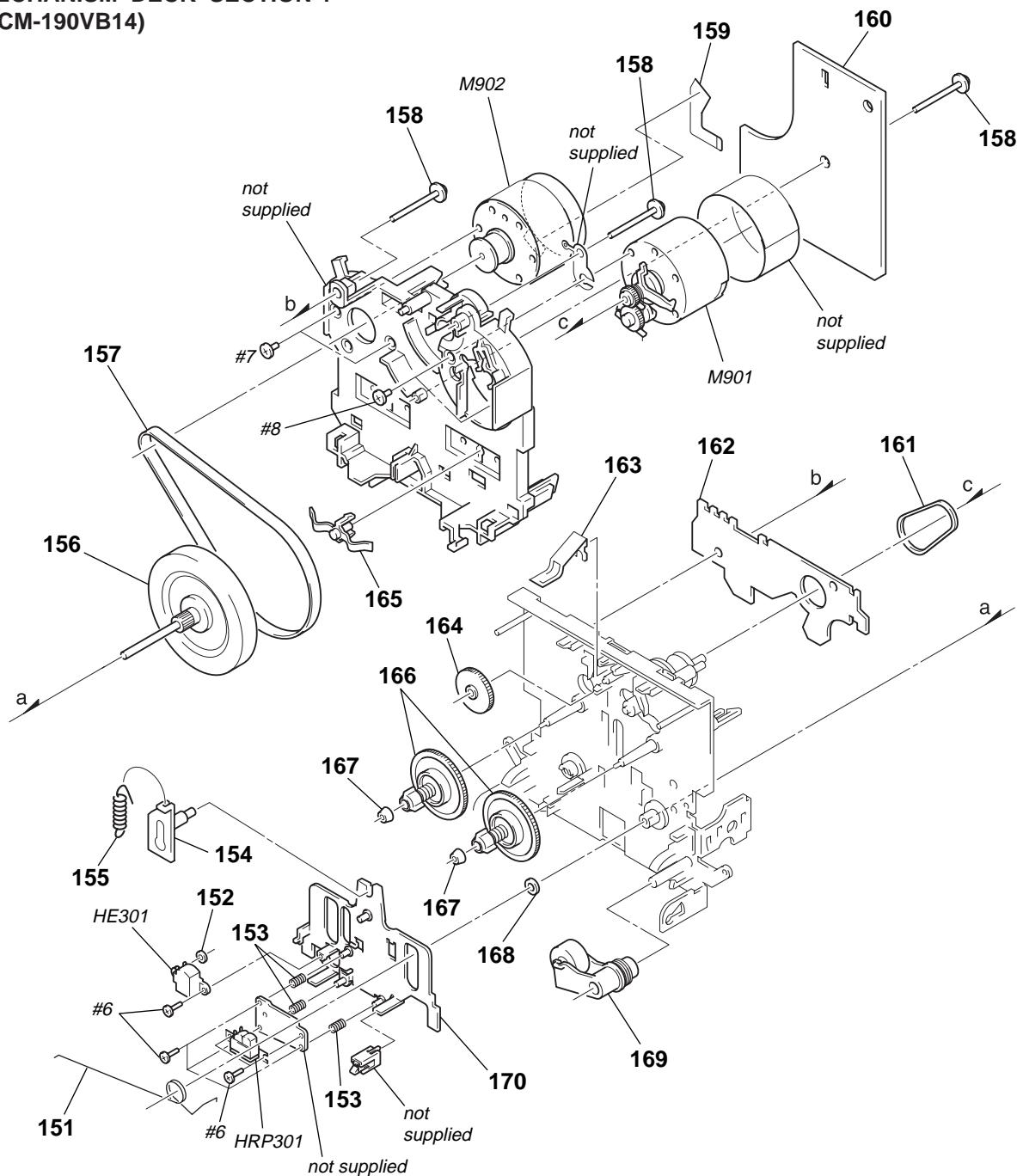
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
51	3-020-978-01	KNOB (REC)(BLACK)		* 60	A-2007-777-A	PANEL BOARD, COMPLETE (MY,SP)	
51	3-020-978-11	KNOB (REC)(SILVER)		61	3-020-975-01	BUTTON (CONTROL)(BLACK)	
52	3-020-979-01	KNOB (BALANCE)(BLACK)		61	3-020-975-11	BUTTON (CONTROL)(SILVER)	
52	3-020-979-11	KNOB (BALANCE)(SILVER)		62	3-020-977-01	BUTTON (AUTO CAL)(BLACK)	
53	X-3374-954-1	LID ASSY, CASSETTE (BLACK)		62	3-020-977-11	BUTTON (AUTO CAL)(SILVER)	
53	X-3375-905-1	LID ASSY, CASSETTE (SILVER)		63	3-933-299-01	KNOB (DIA. 12)(BLACK)	
54	4-942-568-41	EMBLEM (NO.5), SONY		63	3-933-299-11	KNOB (DIA. 12)(SILVER)	
55	3-020-971-11	PANEL, FRONT (BLACK)(AEP)		64	X-3375-507-1	BASE (KB920S) ASSY, PANEL(BLACK)	
55	3-020-971-31	PANEL, FRONT (MY,SP,AUS)		64	X-3375-906-1	BASE (KB920S) ASSY, PANEL(SILVER)	
55	3-020-971-41	PANEL, FRONT (SILVER)(AEP)		65	3-933-296-01	BUTTON (MONITOR)(BLACK)	
56	3-020-980-01	WINDOW (METER)		65	3-933-296-11	BUTOON (MONITOR)(SILVER)	
57	4-922-921-62	BUTTON (POWER)(BLACK)		66	3-937-169-01	SPRING, TENSION	
57	4-922-921-91	BUTOON (POWER)(SILVER)		67	3-020-976-01	BUTTON (EJECT)(BLACK)	
58	4-951-620-01	SCREW (2.6X8), +BVTP		67	3-020-976-11	BUTTON (EJECT)(SILVER)	
59	1-777-109-11	WIRE (FLAT TYPE) (39 CORE)		68	3-354-981-11	SPRING (SUS), RING	
* 60	A-2007-775-A	PANEL BOARD, COMPLETE (AEP,AUS)					

(3) MD ASS'Y SECTION



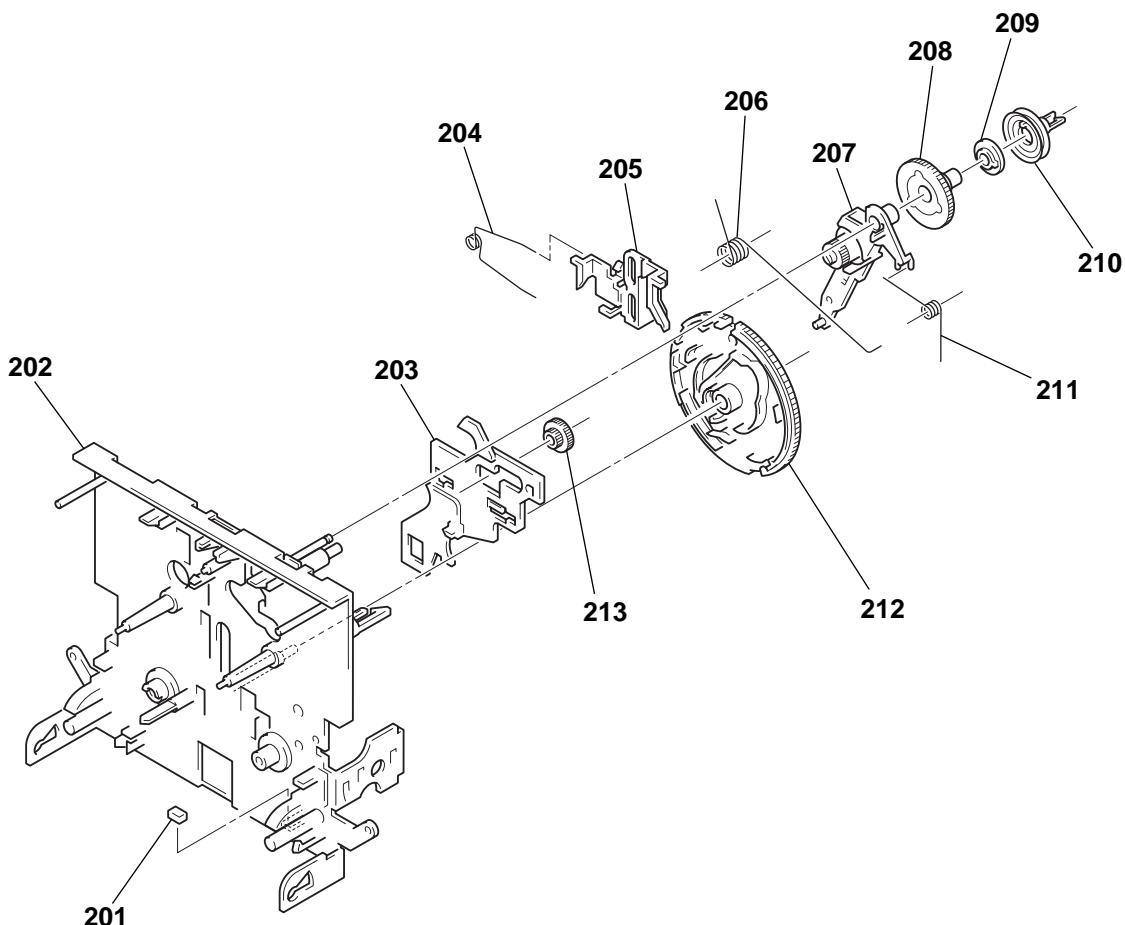
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	X-3368-119-1	HOLDER (R) ASSY, CASSETTE		* 106	3-354-954-01	LEVER (LOCK LEVER R)	
102	3-354-963-01	DAMPER		107	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
103	1-769-915-11	WIRE (FLAT TYPE)(9 CORE)		108	3-354-956-01	LEVER (EJ SAFETY LEVER R)	
104	1-765-314-11	WIRE (FLAT TYPE)(7 CORE)		109	3-354-960-01	SPRING (LOADING R), TORSION	
105	3-354-957-01	JOINT (LOCK LEVER)					

**(4) MECHANISM DECK SECTION-1  
(TCM-190VB14)**



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	3-911-014-01	SPRING, TORSION		163	3-359-430-01	SPRING(CASSETTE RETAINER),LEAF	
152	3-701-437-01	WASHER		164	3-359-424-01	GEAR (REV GEAR)	
153	3-356-659-11	SPRING (RPH), COMPRESSION		165	3-575-321-00	RETAINER, THRUST, CAPSTAN	
* 154	X-3374-992-1	SLIDER (LIMITTER) ASSY		166	X-3366-971-1	TABLE ASSY (B), REEL	
155	3-363-868-01	SPRING (HEAD CHASSIS), TENSION		167	3-362-308-01	CAP (REEL)	
156	X-3368-368-1	FLYWHEEL (FWD) COMPLETE ASSY		168	3-356-713-01	WASHER	
157	3-937-332-01	BELT (CAPSTAN)		169	X-3366-047-1	LEVER (PINCH F) ASSY	
158	3-359-414-01	SCREW (+PTPWH 2X23)		* 170	X-3369-024-1	SLIDER (HEAD CHASSIS) ASSY	
159	1-638-983-11	MOTOR FLEXIBLE BOARD		HE301	1-543-673-11	HEAD, MAGNETIC (ERASE)	
* 160	1-634-840-21	AUDIO BOARD		HRP301	1-543-733-11	HEAD,MAGNETIC (RECORD/PLAYBACK)	
161	3-359-466-01	BELT (FR), SQUARE		M901	X-3363-501-2	MOTOR ASSY (REEL)	
* 162	1-634-841-14	LEAF SW BOARD		M902	X-3374-302-1	MOTOR ASSY (CAPSTAN)	

**(5) MECHANISM DECK SECTION-2  
(TCM-190VB14)**



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	3-359-469-01	SPACER		208	3-359-419-11	GEAR (FR GEAR)	
202	X-3368-719-2	CHASSIS(ONE)ASSY, MECHANICAL		209	3-359-421-01	CLUTCH (REEL DISK)	
203	3-359-415-11	SLIDER (TRIGGER SLIDER)		210	3-359-418-01	PULLEY (FR PULLEY)	
204	3-359-454-01	SPRING, TORSION		211	3-924-185-11	SPRING (FR ARM), TORSION	
205	3-359-429-11	SLIDER (BRAKE PLATE)		212	3-936-483-01	GEAR (CAM GEAR)	
206	3-359-456-01	SPRING(TRIGGER SPRING),TORSION		213	3-359-448-01	GEAR (TRIGGER)	
207	X-3366-569-1	ARM ASSY, FR					



<b>DOLBY-S</b>	<b>HP</b>	<b>LEAF SW</b>	<b>MAIN</b>
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Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark							
R6	1-216-689-11	METAL CHIP	39K	0.5%	1/10W				< CAPACITOR >							
R7	1-216-615-11	METAL CHIP	33	0.5%	1/10W				C101	1-126-963-11	ELECT					
R8	1-208-462-41	RES,CHIP	10K	2%	1/10W				C102	1-106-353-00	MYLAR					
R9	1-208-812-11	RES,CHIP	18K	2%	1/10W				C103	1-136-173-00	FILM					
R10	1-216-615-11	METAL CHIP	33	0.5%	1/10W				C104	1-126-964-11	ELECT					
R11	1-216-619-11	METAL CHIP	47	0.5%	1/10W				C105	1-136-165-00	FILM					
R12	1-216-684-11	METAL CHIP	24K	0.5%	1/10W				C106	1-136-163-00	FILM					
R13	1-216-615-11	METAL CHIP	33	0.5%	1/10W				C107	1-126-964-11	ELECT					
R14	1-216-619-11	METAL CHIP	47	0.5%	1/10W				C110	1-126-959-11	ELECT					
R15	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W				C111	1-126-964-11	ELECT					
R16	1-216-678-11	METAL CHIP	13K	0.5%	1/10W				C112	1-126-963-11	ELECT					
R17	1-216-673-11	METAL CHIP	8.2K	0.5%	1/10W				C113	1-137-428-11	FILM					
R18	1-208-462-41	RES,CHIP	10K	2%	1/10W				C114	1-136-935-11	FILM					
R19	1-208-462-41	RES,CHIP	10K	2%	1/10W				C115	1-137-429-11	FILM					
R20	1-216-689-11	METAL CHIP	39K	0.5%	1/10W				C116	1-130-474-00	MYLAR					
*****																
HP BOARD						*****										
(Included in PANEL BOARD, COMPLETE)																
< CAPACITOR >																
C317	1-161-494-00	CERAMIC	0.022uF	25V												
< JACK >																
J302	1-568-519-41	JACK, LARGE TYPE (PHONES)														
*****																
*	1-634-841-14	LEAF SW BOARD														
*****																
< CONNECTOR >																
* CNP81	1-568-852-11	SOCKET, CONNECTOR 9P														
< IC >																
IC81	8-749-924-10	IC PHOTO REFLECTOR NJL5165K-B(H1)														
IC82	8-749-924-10	IC PHOTO REFLECTOR NJL5165K-B(H1)														
< RESISTOR >																
R81	1-249-414-11	CARBON	560	5%	1/4W											
R83	1-247-834-11	CARBON	1.3K	5%	1/4W											
R84	1-249-417-11	CARBON	1K	5%	1/4W											
R85	1-249-408-11	CARBON	180	5%	1/4W											
R86	1-249-408-11	CARBON	180	5%	1/4W											
< SWITCH >																
S81	1-571-958-11	SWITCH, PUSH (1 KEY) (MECHANISM STOP)														
S82	1-571-281-21	SWITCH, LEAF (70u)														
S83	1-571-281-21	SWITCH, LEAF (METAL)														
S84	1-571-281-21	SWITCH, LEAF (REC)														
S86	1-571-281-21	SWITCH, LEAF (HALF)														
*****																
*	A-2007-776-A	MAIN BOARD, COMPLETE (AEP, AUS)														
*****																
(Including TRANSFORMER BOARD)																
*	A-2007-778-A	MAIN BOARD, COMPLETE (MY, SP)														
*****																
7-685-871-01 SCREW +BVTT 3X6 (S)																

# MAIN

Ref. No.	Part No.	Description		Remark	Ref. No.	Part No.	Description		Remark		
C226	1-130-468-00	MYLAR	560PF	5%	50V	C831	1-104-665-11	ELECT	100uF	20%	10V
C227	1-136-433-11	FILM	100PF	5%	630V						< CONNECTOR >
C228	1-130-474-00	MYLAR	0.0018uF	5%	50V	CN101	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
C230	1-106-351-00	MYLAR	2200PF	5%	200V	CN102	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
C231	1-126-964-11	ELECT	10uF	20%	50V	CN201	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
C232	1-136-165-00	FILM	0.1uF	5%	50V	CN202	1-695-087-11	PIN, CONNECTOR (PC BOARD) 7P			
C233	1-136-163-00	FILM	0.068uF	5%	50V	* CN801	1-568-954-11	PIN, CONNECTOR 5P			
C236	1-126-964-11	ELECT	10uF	20%	50V	* CN803	1-568-828-11	SOCKET, CONNECTOR 9P			
C250	1-162-302-11	CERAMIC	0.0022uF	20%	16V	* CN804	1-568-826-11	SOCKET, CONNECTOR 7P			
C301	1-126-964-11	ELECT	10uF	20%	50V	CN805	1-778-065-11	SOCKET, CONNECTOR 3P			
C302	1-126-964-11	ELECT	10uF	20%	50V	* CNP301	1-506-468-11	PIN, CONNECTOR 3P			
C303	1-130-478-00	MYLAR	0.0039uF	5%	50V	* CNP302	1-560-062-00	PIN, CONNECTOR 4P			
C304	1-126-959-11	ELECT	0.47uF	20%	50V						< DIODE >
C305	1-130-494-11	MYLAR	0.082uF	5%	50V	* CNP303	1-560-060-00	PIN, CONNECTOR 2P			
C306	1-126-960-11	ELECT	1uF	20%	50V	* CNP304	1-560-062-00	PIN, CONNECTOR 4P			
C307	1-104-665-11	ELECT	100uF	20%	10V	CNP305	1-691-463-11	PIN, CONNECTOR (PC BOARD) 7P			
C308	1-104-665-11	ELECT	100uF	20%	10V	CNP306	1-764-328-11	PIN, CONNECTOR (PCB)(V TYPE)5P			
C309	1-162-282-31	CERAMIC	100PF	10%	50V						
C310	1-161-494-00	CERAMIC	0.022uF		25V						
C311	1-126-961-11	ELECT	2.2uF	20%	50V	D101	8-719-911-19	DIODE 1SS119			
C312	1-162-217-31	CERAMIC	56PF	5%	50V	D102	8-719-911-19	DIODE 1SS119			
C313	1-126-961-11	ELECT	2.2uF	20%	50V	D103	8-719-933-33	DIODE HZS6A1L			
C319	1-126-964-11	ELECT	10uF	20%	50V	D201	8-719-911-19	DIODE 1SS119			
C320	1-126-947-11	ELECT	47uF	20%	35V	D202	8-719-911-19	DIODE 1SS119			
C321	1-126-947-11	ELECT	47uF	20%	35V	D203	8-719-933-33	DIODE HZS6A1L			
C322	1-137-613-11	MYLAR	0.0018uF	5%	100V	D301	8-719-911-19	DIODE 1SS119			
C323	1-137-613-11	MYLAR	0.0018uF	5%	100V	D302	8-719-911-19	DIODE 1SS119			
C324	1-106-359-00	MYLAR	4700PF	5%	200V	D305	8-719-911-19	DIODE 1SS119			
C325	1-126-965-11	ELECT	22uF	20%	50V	D306	8-719-911-19	DIODE 1SS119			
C326	1-136-558-11	FILM	0.0039uF	5%	630V	D307	8-719-911-19	DIODE 1SS119			
C327	1-107-584-11	CERAMIC	4PF	0.25PF	500V	D308	8-719-911-19	DIODE 1SS119			
C330	1-126-964-11	ELECT	10uF	20%	50V	D309	8-719-911-19	DIODE 1SS119			
C331	1-126-964-11	ELECT	10uF	20%	50V	D310	8-719-911-19	DIODE 1SS119			
C332	1-126-961-11	ELECT	2.2uF	20%	50V	D311	8-719-911-19	DIODE 1SS119			
C333	1-126-964-11	ELECT	10uF	20%	50V	D312	8-719-911-19	DIODE 1SS119			
C334	1-126-964-11	ELECT	10uF	20%	50V	D313	8-719-911-19	DIODE 1SS119			
C701	1-126-768-11	ELECT	2200uF	20%	16V	D341	8-719-911-19	DIODE 1SS119			
C702	1-126-936-11	ELECT	3300uF	20%	16V	D342	8-719-911-19	DIODE 1SS119			
C703	1-126-916-11	ELECT	1000uF	20%	6.3V	D701	8-719-024-99	DIODE 11ES2-NTA2B			
C704	1-126-947-11	ELECT	47uF	20%	35V	D702	8-719-024-99	DIODE 11ES2-NTA2B			
C705	1-126-942-61	ELECT	1000uF	20%	25V	D703	8-719-024-99	DIODE 11ES2-NTA2B			
C706	1-126-942-61	ELECT	1000uF	20%	25V	D704	8-719-024-99	DIODE 11ES2-NTA2B			
C707	1-128-548-11	ELECT	4700uF	20%	25V	D705	8-719-911-19	DIODE 1SS119			
C708	1-126-964-11	ELECT	10uF	20%	50V	D706	8-719-933-33	DIODE HZS6A1L			
C709	1-126-768-11	ELECT	2200uF	20%	16V	D707	8-719-933-33	DIODE HZS6A1L			
C710	1-126-964-11	ELECT	10uF	20%	50V	D708	8-719-933-33	DIODE HZS6A1L			
C711	1-126-937-11	ELECT	4700uF	20%	16V	D709	8-719-025-03	DIODE RBA-402-SL			
C712	1-126-964-11	ELECT	10uF	20%	50V	D710	8-719-986-27	DIODE HZS12B1LTA			
C713	1-126-927-11	ELECT	2200uF	20%	10V	D711	8-719-911-19	DIODE 1SS119			
C714	1-126-968-11	ELECT	100uF	20%	50V	D712	8-719-200-31	DIODE 21DQ05			
C715	1-164-159-11	CERAMIC	0.1uF		50V	D713	8-719-985-95	DIODE HZS7A2LTA			
C716	1-126-947-11	ELECT	47uF	20%	35V	D714	8-719-911-19	DIODE 1SS119			
C805	1-164-159-11	CERAMIC	0.1uF		50V	D715	8-719-911-19	DIODE 1SS119			
C806	1-164-159-11	CERAMIC	0.1uF		50V	D716	8-719-986-00	DIODE HZS7C1LTA			
C809	1-126-959-11	ELECT	0.47uF	20%	50V	D717	8-719-024-99	DIODE 11ES2-NTA2B			
C811	1-164-159-11	CERAMIC	0.1uF		50V	D802	8-719-911-19	DIODE 1SS119			
C813	1-126-959-11	ELECT	0.47uF	20%	50V	D803	8-719-911-19	DIODE 1SS119			
C830	1-164-159-11	CERAMIC	0.1uF		50V	D804	8-719-911-19	DIODE 1SS119			

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
D814	8-719-911-19	DIODE 1SS119		Q316	8-729-900-74	TRANSISTOR DTC143TS	
D815	8-719-911-19	DIODE 1SS119	< IC >	Q351	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC301	8-759-111-44	IC uPC4570C-1		Q352	8-729-900-65	TRANSISTOR DTA144ES	
IC302	8-752-066-35	IC CXA1563S		Q353	8-729-900-80	TRANSISTOR DTC114ES	
IC303	8-752-070-69	IC CXA1598S		Q701	8-729-141-83	TRANSISTOR 2SB1094-LK	
IC304	8-759-106-56	IC uPC1297CA		Q702	8-729-209-15	TRANSISTOR 2SD2012	
IC305	8-759-634-51	IC M5218AP		Q703	8-729-141-83	TRANSISTOR 2SB1094-LK	
IC306	8-759-634-51	IC M5218AP		Q704	8-729-119-78	TRANSISTOR 2SC403SP-51	
IC307	8-752-066-35	IC CXA1563S		Q705	8-729-209-15	TRANSISTOR 2SD2012	
IC308	8-759-634-50	IC M5218AL		Q706	8-729-119-78	TRANSISTOR 2SC403SP-51	
IC309	8-759-634-50	IC M5218AL		Q707	8-729-119-76	TRANSISTOR 2SA1175-HFE	
IC310	8-759-140-53	IC uPD4053BC		Q708	8-729-140-04	TRANSISTOR 2SB1116A-L	
IC311	8-759-634-51	IC M5218AP		Q802	8-729-900-89	TRANSISTOR DTC144ES	
IC701	8-759-634-51	IC M5218AP		Q803	8-729-900-65	TRANSISTOR DTA144ES	
IC801	8-759-422-06	IC M38172M4-171FP		Q804	8-729-900-65	TRANSISTOR DTA144ES	
IC803	8-759-973-95	IC BA6219B		Q806	8-729-900-80	TRANSISTOR DTC114ES	
IC804	8-759-165-82	IC PST600E-T		Q807	8-729-900-80	TRANSISTOR DTC114ES	
		< JACK >		Q808	8-729-900-80	TRANSISTOR DTC114ES	
J301	1-784-430-11	JACK, PIN 4P (LINE IN, OUT)		Q809	8-729-900-80	TRANSISTOR DTC114ES	
		< COIL >		Q810	8-729-801-84	TRANSISTOR 2SB1013-4	
L101	1-410-780-11	INDUCTOR 27mH		Q814	8-729-900-89	TRANSISTOR DTC144ES	
L121	1-410-778-11	INDUCTOR 18mH					
L201	1-410-780-11	INDUCTOR 27mH					
L221	1-410-778-11	INDUCTOR 18mH					
		< FILTER >					
LPF101	1-234-037-11	FILTER, LOW PASS					
LPF201	1-234-037-11	FILTER, LOW PASS					
		< TRANSISTOR >					
O101	8-729-900-74	TRANSISTOR DTC143TS					
O102	8-729-900-80	TRANSISTOR DTC114ES					
O103	8-729-922-37	TRANSISTOR 2SD2144S					
O105	8-729-900-80	TRANSISTOR DTC114ES					
O201	8-729-900-74	TRANSISTOR DTC143TS					
Q202	8-729-900-80	TRANSISTOR DTC114ES					
Q203	8-729-922-37	TRANSISTOR 2SD2144S					
Q205	8-729-900-80	TRANSISTOR DTC114ES					
Q301	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q302	8-729-900-89	TRANSISTOR DTC144ES					
Q303	8-729-900-80	TRANSISTOR DTC114ES					
Q304	8-729-900-80	TRANSISTOR DTC114ES					
Q305	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q306	8-729-900-89	TRANSISTOR DTC144ES		△R128	1-219-153-11	FUSIBLE	
Q307	8-729-900-80	TRANSISTOR DTC114ES		R124	1-249-441-11	CARBON	100K 5% 1/4W
Q308	8-729-900-80	TRANSISTOR DTC114ES		R125	1-249-421-11	CARBON	2.2K 5% 1/4W
Q309	8-729-900-80	TRANSISTOR DTC114ES		R126	1-249-425-11	CARBON	4.7K 5% 1/4W
Q310	8-729-194-57	TRANSISTOR 2SC945-P		R127	1-249-435-11	CARBON	33K 5% 1/4W
Q311	8-729-194-57	TRANSISTOR 2SC945-P		R128	1-219-153-11	FUSIBLE	10 5% 1/4W F
Q312	8-729-922-37	TRANSISTOR 2SD2144S		R129	1-247-883-00	CARBON	150K 5% 1/4W
Q313	8-729-119-78	TRANSISTOR 2SC403SP-51		R130	1-249-434-11	CARBON	27K 5% 1/4W
Q314	8-729-119-78	TRANSISTOR 2SC403SP-51		R131	1-247-874-11	CARBON	62K 5% 1/4W
Q315	8-729-900-80	TRANSISTOR DTC114ES		R133	1-249-410-11	CARBON	270 5% 1/4W
				R137	1-249-441-11	CARBON	100K 5% 1/4W
				R138	1-249-441-11	CARBON	100K 5% 1/4W
				R139	1-247-864-11	CARBON	24K 5% 1/4W
				R140	1-249-429-11	CARBON	10K 5% 1/4W
				R141	1-249-419-11	CARBON	1.5K 5% 1/4W
				R142	1-249-426-11	CARBON	5.6K 5% 1/4W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

# MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R143	1-247-843-11	CARBON	3.3K 5% 1/4W	R316	1-247-872-11	CARBON	51K 5% 1/4W
R144	1-249-409-11	CARBON	220 5% 1/4W	R317	1-249-435-11	CARBON	33K 5% 1/4W
R145	1-249-426-11	CARBON	5.6K 5% 1/4W	R318	1-247-864-11	CARBON	24K 5% 1/4W
R152	1-247-887-00	CARBON	220K 5% 1/4W	R319	1-249-436-11	CARBON	39K 5% 1/4W
R201	1-249-433-11	CARBON	22K 5% 1/4W	R320	1-249-435-11	CARBON	33K 5% 1/4W
R202	1-249-417-11	CARBON	1K 5% 1/4W	R321	1-247-856-00	CARBON	11K 5% 1/4W
R203	1-247-843-11	CARBON	3.3K 5% 1/4W	R322	1-249-432-11	CARBON	18K 5% 1/4W
R204	1-249-428-11	CARBON	8.2K 5% 1/4W	R323	1-247-864-11	CARBON	24K 5% 1/4W
R205	1-249-441-11	CARBON	100K 5% 1/4W	R324	1-247-874-11	CARBON	62K 5% 1/4W
R207	1-249-421-11	CARBON	2.2K 5% 1/4W	R325	1-247-862-11	CARBON	20K 5% 1/4W
R208	1-247-860-11	CARBON	16K 5% 1/4W	R326	1-249-437-11	CARBON	47K 5% 1/4W
R209	1-249-421-11	CARBON	2.2K 5% 1/4W	R327	1-247-852-11	CARBON	7.5K 5% 1/4W
R210	1-249-417-11	CARBON	1K 5% 1/4W	R328	1-247-860-11	CARBON	16K 5% 1/4W
R212	1-247-843-11	CARBON	3.3K 5% 1/4W	R329	1-247-862-11	CARBON	20K 5% 1/4W
R213	1-249-437-11	CARBON	47K 5% 1/4W	R330	1-247-836-11	CARBON	1.6K 5% 1/4W
R214	1-249-429-11	CARBON	10K 5% 1/4W	R331	1-249-425-11	CARBON	4.7K 5% 1/4W
R216	1-249-425-11	CARBON	4.7K 5% 1/4W	R332	1-249-422-11	CARBON	2.7K 5% 1/4W
R217	1-249-441-11	CARBON	100K 5% 1/4W	R333	1-249-417-11	CARBON	1K 5% 1/4W
R218	1-249-403-11	CARBON	68 5% 1/4W	R334	1-249-417-11	CARBON	1K 5% 1/4W
R219	1-247-882-11	CARBON	130K 5% 1/4W	R335	1-249-413-11	CARBON	470 5% 1/4W
R220	1-249-426-11	CARBON	5.6K 5% 1/4W	R336	1-247-832-11	CARBON	1.1K 5% 1/4W
R221	1-249-429-11	CARBON	10K 5% 1/4W	R337	1-249-429-11	CARBON	10K 5% 1/4W
R222	1-249-420-11	CARBON	1.8K 5% 1/4W	R338	1-249-421-11	CARBON	2.2K 5% 1/4W
R223	1-247-838-00	CARBON	2K 5% 1/4W	R339	1-249-440-11	CARBON	82K 5% 1/4W
R224	1-249-441-11	CARBON	100K 5% 1/4W	R340	1-249-440-11	CARBON	82K 5% 1/4W
R225	1-249-421-11	CARBON	2.2K 5% 1/4W	R341	1-249-390-11	CARBON	5.6 5% 1/4W
R226	1-249-425-11	CARBON	4.7K 5% 1/4W	R342	1-249-390-11	CARBON	5.6 5% 1/4W
R227	1-249-435-11	CARBON	33K 5% 1/4W	R343	1-249-437-11	CARBON	47K 5% 1/4W
△R228	1-219-153-11	FUSIBLE	10 5% 1/4W F	R344	1-249-429-11	CARBON	10K 5% 1/4W
R229	1-247-883-00	CARBON	150K 5% 1/4W	R345	1-249-433-11	CARBON	22K 5% 1/4W
R230	1-249-434-11	CARBON	27K 5% 1/4W	R346	1-249-437-11	CARBON	47K 5% 1/4W
R231	1-247-874-11	CARBON	62K 5% 1/4W	R349	1-249-427-11	CARBON	6.8K 5% 1/4W
R233	1-249-410-11	CARBON	270 5% 1/4W	R350	1-249-441-11	CARBON	100K 5% 1/4W
R237	1-249-441-11	CARBON	100K 5% 1/4W	R351	1-247-843-11	CARBON	3.3K 5% 1/4W
R238	1-249-441-11	CARBON	100K 5% 1/4W	R352	1-249-429-11	CARBON	10K 5% 1/4W
R239	1-247-864-11	CARBON	24K 5% 1/4W	R353	1-249-429-11	CARBON	10K 5% 1/4W
R240	1-249-429-11	CARBON	10K 5% 1/4W	R354	1-249-417-11	CARBON	1K 5% 1/4W
R241	1-249-419-11	CARBON	1.5K 5% 1/4W	R355	1-249-401-11	CARBON	47 5% 1/4W
R242	1-249-426-11	CARBON	5.6K 5% 1/4W	R356	1-249-434-11	CARBON	27K 5% 1/4W
R243	1-247-843-11	CARBON	3.3K 5% 1/4W	R357	1-247-848-11	CARBON	5.1K 5% 1/4W
R244	1-249-409-11	CARBON	220 5% 1/4W	R358	1-247-870-11	CARBON	43K 5% 1/4W
R245	1-249-426-11	CARBON	5.6K 5% 1/4W	R359	1-249-434-11	CARBON	27K 5% 1/4W
R252	1-247-887-00	CARBON	220K 5% 1/4W	R360	1-249-437-11	CARBON	47K 5% 1/4W
R302	1-247-848-11	CARBON	5.1K 5% 1/4W	R361	1-249-429-11	CARBON	10K 5% 1/4W
R303	1-249-421-11	CARBON	2.2K 5% 1/4W	△R363	1-215-452-00	METAL	20K 1% 1/4W F
R304	1-249-421-11	CARBON	2.2K 5% 1/4W	R365	1-249-433-11	CARBON	22K 5% 1/4W
△R305	1-215-452-00	METAL	20K 1% 1/4W F	R366	1-247-862-11	CARBON	20K 5% 1/4W
R306	1-249-436-11	CARBON	39K 5% 1/4W	R367	1-249-429-11	CARBON	10K 5% 1/4W
R307	1-249-433-11	CARBON	22K 5% 1/4W	R368	1-249-429-11	CARBON	10K 5% 1/4W
R308	1-249-437-11	CARBON	47K 5% 1/4W	R701	1-249-417-11	CARBON	1K 5% 1/4W
△R309	1-215-455-00	METAL	27K 1% 1/4W F	R702	1-249-409-11	CARBON	220 5% 1/4W
R310	1-249-441-11	CARBON	100K 5% 1/4W	R703	1-247-812-11	CARBON	160 5% 1/4W
R311	1-249-441-11	CARBON	100K 5% 1/4W	R704	1-249-420-11	CARBON	1.8K 5% 1/4W
R312	1-249-433-11	CARBON	22K 5% 1/4W	△R705	1-219-139-11	FUSIBLE	0.68 10% 1/4W F
R313	1-249-434-11	CARBON	27K 5% 1/4W	R706	1-249-425-11	CARBON	4.7K 5% 1/4W
R314	1-247-872-11	CARBON	51K 5% 1/4W	R707	1-249-427-11	CARBON	6.8K 5% 1/4W
R315	1-247-866-11	CARBON	30K 5% 1/4W	R708	1-249-419-11	CARBON	1.5K 5% 1/4W
				R709	1-249-419-11	CARBON	1.5K 5% 1/4W

The components identified by mark △ or dotted line with mark △ are critical for safety.  
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark		Ref. No.	Part No.	Description	Remark									
R710	1-249-427-11	CARBON	6.8K	5%	1/4W	< TEST PIN >											
R711	1-249-425-11	CARBON	4.7K	5%	1/4W												
R712	1-249-417-11	CARBON	1K	5%	1/4W												
△ R713	1-219-139-11	FUSIBLE	0.68	10%	1/4W F												
	1-249-427-11	CARBON	6.8K	5%	1/4W												
△ R715	1-219-135-11	FUSIBLE	0.15	10%	1/4W F	< VIBRATOR >											
R716	1-249-425-11	CARBON	4.7K	5%	1/4W												
R717	1-249-417-11	CARBON	1K	5%	1/4W												
△ R718	1-219-137-11	FUSIBLE	0.33	10%	1/4W F	X801	1-577-358-21	VIBRATOR, CERAMIC (4MHz)									
	1-249-425-11	CARBON	4.7K	5%	1/4W												
R720	1-247-830-11	CARBON	910	5%	1/4W	* A-2007-775-A	PANEL BOARD, COMPLETE (AEP, AUS)										
R721	1-249-437-11	CARBON	47K	5%	1/4W												
R722	1-249-437-11	CARBON	47K	5%	1/4W		(Including AC POWER BOARD, HP BOARD,										
R723	1-247-843-11	CARBON	3.3K	5%	1/4W		and REC VOL BOARD)										
R724	1-249-429-11	CARBON	10K	5%	1/4W	* A-2007-777-A	PANEL BOARD, COMPLETE (MY, SP)										
R802	1-249-433-11	CARBON	22K	5%	1/4W												
R803	1-249-441-11	CARBON	100K	5%	1/4W		(Including AC POWER BOARD, HP BOARD,										
R804	1-249-417-11	CARBON	1K	5%	1/4W		REC VOL BOARD, TRANS1 BOARD,										
R805	1-249-425-11	CARBON	4.7K	5%	1/4W		and TRANS 2 BOARD)										
R807	1-249-422-11	CARBON	2.7K	5%	1/4W	* 3-386-245-11	HOLDER (FL)										
R808	1-249-425-11	CARBON	4.7K	5%	1/4W		< CAPACITOR >										
R810	1-249-422-11	CARBON	2.7K	5%	1/4W												
R811	1-249-422-11	CARBON	2.7K	5%	1/4W		< CONNECTOR >										
R812	1-249-417-11	CARBON	1K	5%	1/4W	C901	1-104-665-11	ELECT	100uF	20%	10V						
R813	1-249-419-11	CARBON	1.5K	5%	1/4W												
R814	1-249-421-11	CARBON	2.2K	5%	1/4W		< DIODE >										
R815	1-247-828-11	CARBON	750	5%	1/4W		CN901	1-778-065-11	SOCKET, CONNECTOR 39P								
R816	1-249-413-11	CARBON	470	5%	1/4W	D901	8-719-911-19	DIODE	ISS119								
△ R817	1-212-954-11	FUSIBLE	6.8	5%	1/2W F		8-719-911-19	DIODE	ISS119								
	1-249-430-11	CARBON	12K	5%	1/4W		8-719-911-19	DIODE	ISS119								
R825	1-249-435-11	CARBON	33K	5%	1/4W		8-719-911-19	DIODE	ISS119								
R826	1-249-429-11	CARBON	10K	5%	1/4W		8-719-911-19	DIODE	ISS119								
R831	1-249-429-11	CARBON	10K	5%	1/4W	IC901	< IC >										
R832	1-249-429-11	CARBON	10K	5%	1/4W												
R833	1-249-429-11	CARBON	10K	5%	1/4W		< TRANSISTOR >										
R834	1-249-434-11	CARBON	27K	5%	1/4W		8-749-014-66	IC	NJL56H400								
R835	1-249-434-11	CARBON	27K	5%	1/4W	Q901	< TRANSISTOR >										
R845	1-249-429-11	CARBON	10K	5%	1/4W		8-729-900-89	TRANSISTOR	DTC144ES								
< CONPOSITION CIRCUIT BLOCK >					Q902	8-729-900-89	TRANSISTOR	DTC144ES									
						8-729-900-89	TRANSISTOR	DTC144ES									
					Q903	8-729-900-89	TRANSISTOR	DTC144ES									
						< RESISTOR >											
< VARIABLE RESISTOR >																	
RV101	1-241-765-11	RES, ADJ, CARBON	22K														
RV102	1-238-019-11	RES, ADJ, CARBON	47K														
RV103	1-241-765-11	RES, ADJ, CARBON	22K														
RV121	1-241-763-11	RES, ADJ, CARBON	4.7K														
RV201	1-241-765-11	RES, ADJ, CARBON	22K														
RV202	1-238-019-11	RES, ADJ, CARBON	47K														
RV203	1-241-765-11	RES, ADJ, CARBON	22K														
RV221	1-241-763-11	RES, ADJ, CARBON	4.7K														
RV306	1-241-763-11	RES, ADJ, CARBON	4.7K														
< TRANSFORMER >					R924	1-247-807-31	CARBON	100	5%	1/4W							
						< SWITCH >											
T101	1-433-344-11	TRANSFORMER, BIAS OSCILLATION			S901												
T201	1-433-344-11	TRANSFORMER, BIAS OSCILLATION															
T301	1-423-614-11	TRANSFORMER, BIAS OSCILLATION															

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

## PANEL

**REC VOL**

# TRANSFORMER

TRANS 1

## **TRANS 2**

The components identified by mark  $\triangle$  or dotted line with mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
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## ACCESSORIES &amp; PACKING MATERIALS

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- 1-776-263-11 CORD, CONNECTION (AUDIO) 1.5m  
3-862-301-11 MANUAL, INSTRUCTION (ENGLISH, FRENCH,  
SPANISH, PORTUGUESE)  
3-862-301-21 MANUAL, INSTRUCTION (GERMAN, DUTCH,  
SWEDISH, ITALIAN)(AEP)  
3-862-301-31 MANUAL, INSTRUCTION (CHINESE)(MY,SP)

